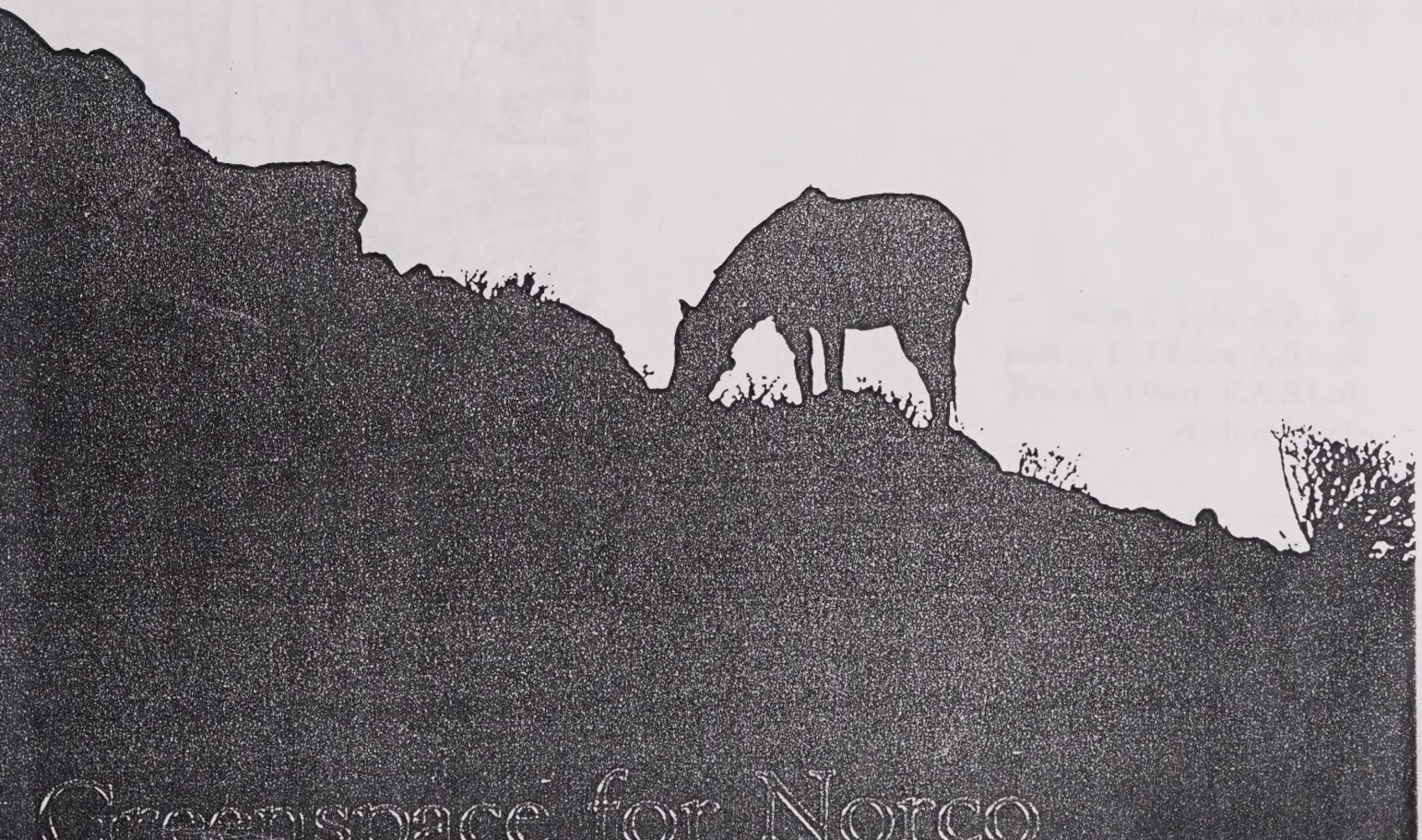
95 00346

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

JAN 1 1995

UNIVERSITY OF CALIFORNIA



Greenspace for Norco

A Master Plan for Parks, Recreation and Open Space

Greenspace for Norco

A Master Plan for Parks, Recreation and Open Space

Project Team — Verna Jigour, Shinpei Koyama, Gary Vasquez

Assisted by — Faith Perry, Lisa Schenck

Principals — John T. Lyle A.S.L.A., Jeffrey K. Olson A.S.L.A., Francis Dean F.A.S.L.A., Arthur Jokela

606 STUDIO

Graduate Studies in Landscape Architecture
California State Polytechnic University, Pomona June 1989

Acknowledgements

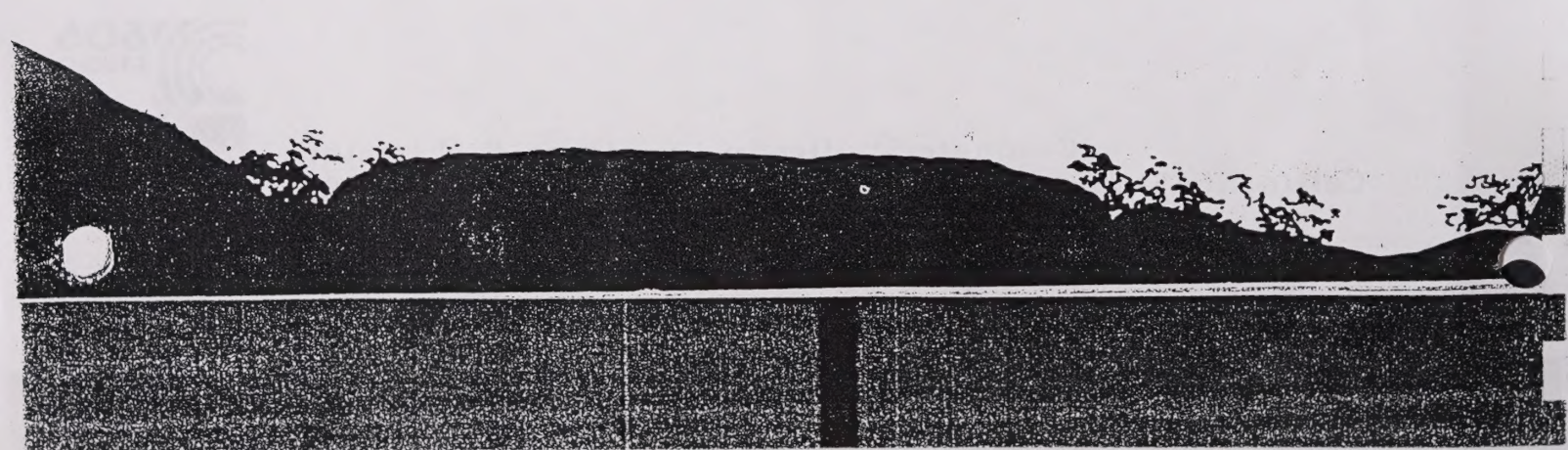
During the preparation of the Greenspace plan, the 606 Studio team members met regularly with Parks and Recreation Department Director, Ray Odell, his assistants, Becky Mendoza and Debby Williams and the members of the Parks and Recreation Commission: Paul Hadnagy, Sharon Ladnier, Mitchell Bernstein, Jo Ann Dickson, and Doris Haney, who provided valuable feedback and insights. Student representatives to the commission, Tiffany Goodsell and Rick Becerra offered insights as well as soliciting student input. Denise Lawrence, Chair, Environmental Studies Department at Cal Poly, Pomona, provided invaluable guidance for the social research. Jim Burns, Community Workshop Consultant, based in San Francisco, coordinated the community workshops, generously sharing his expertise, wit, materials and energy. City of Norco staff members who assisted included Cathy Ives, Gene W. "Bill" Young, James E. Daniels, Nancy Owens, James Ashcraft, Nancy Hemphill, Elizabeth Kann Brent Richards, Ken O'Neill, Captain R. C. "Bob" Lloyd and City Manager, Ron Cano. Members of the Norco community who contributed ideas and observations included Lisa O Shaughnessy, Laurie Putman, Carolyn Burnett, Cathy Ryan, Tyler and Linda Mitchel, Lewann Hepfler, Barbara and Dayle Starbuck and Ann McClure, in addtion to the other community members who participated in the workshops. Dr. William H. Roley and Roger and Ellen Aguinaga, of Aguinaga Fertilizer, Inc. were instrumental in the development of composting options. Special thanks go to friends who assisted at critical times: Emiko Koyama, Marcia McDonough, Lynne Dwyer Hade and Laura Rhodes. George Stavros, Professor of English and Foreign Languages at Cal Poly, Pomona, provided valuable editorial assistance.

Introduction

Norco has a substantial foundation of superb open space with which to create a greenspace system of uniquely high quality and appeal. The historic importance of Norco's rural character, which is emphasized by the ro of horses in the community, can be enhanced and further developed through the town's greenspace planning and implementation program. The greenspa system will enable the community to be more of what it wants to be, by capitalizing on the inherent riches of its landscape.

A Definition of Greenspace

The term "greenspace" refers to a synergistic system in which all of the contributing features are connected in such a way as to perform more effectively than they do as isolated elements. Greenspace features include parks, natural areas and trails. They also include visual open space that may or may not be accessible; wildlife habita as well as soccer fields and other recreational facilitie informal community gathering areas as well as structured meeting spaces. Greenspace supports and regenerates the human community, the community o plants and animals in its area and the ecological health of the town. A greenspace system is the major mediun of a community's ecosystem, including flows of water and nutrients and wildlife habitat. Greenspace provides the landscape matrix through which the community's outdoor needs are woven. Successful greenspace must amenable to the changing needs of the community and therefore must have flexibility built into its planning framework. Greenspace can perform a vital role in drawing the citizens of Norco together.



Contents

I. A Greenspace Plan 2
Plan Summary
Purpose of Project
General Methods

II. The Region 6
Regional Character
Regional Natural Areas
The Hydrology Model

III. Norco Geography 12
History
The Community and its Equestrian Character
Rural Character and Recent Development
Youth
Adults and General Demographics
Institutions
Commercial Character
Local Physiography
The Hills
The Santa Ana River
Lake Norconian
External Resources
Internal Influences

IV. Issues and Goals 23

V. Greenspace Inventory 24
Regional Connections
The Hills
The Central Green
The Santa Ana River
Greenspace Inventory
Existing Parks
Planned Parks
Schools
Park Inventory Conclusions

VI. Greenspace Demands and Trends 42
Community Profile
User Need Survey
Focused Interviews
Community Workshops and Personal Contacts
Outdoor Recreation - Trends in California

VII. Ecological Analysis 52
Water and Nutrient Flow
Greenspace Suitabiltiy Model
Hill Suitability Analysis

VIII. Design Themes 60
Design Themes
The Country Town
The Spirit of Place
The Equestian Community
Theme Elements
Trail System

IX. Decision Stages 66
The Objective of a Greenspace Plan
Stages of Decision
Stage 1 - Immediate Decisions
Stage 2
Stage 3
Stage 4 - Ideal Greenspace

X. Planning and Design Recommendations 78
The Central Green
The Hills
The Mountain Park
Rest Stops
Wildlife Santuaries
Linear Parks and Greenspace Corridors
Sixth Street
Ingalls Plaza
Trail Overpass
Amphitheater

XI. Greenspace as an Ecological Support System 92
Regional Corridors
Animal and Waste Options
Water and Nutrient Flow
Stormwater Treatment and Retention Ponds

XII. Greenspace Standards 98
Standards

XIII. Appendices 102
A. Achieving Viable Greenspace for Wildlife and Humans in the Urbanizing Environment
B. Urban Creeks and Floodway Channels – A Hidden Resource
C. Sources of Funding for Parks and Open Space
D. Questionnaire Tallies
E. Data Maps
1. Greenspace Inventory
2. Land Use
3. Slope
4. Vegetative Associations
5. Site Analysis

A Greenspace Plan

Section I

Plan Summary

This plan presents a framework which organizes the elements of Norco's existing and future greenspace into a systematic whole. The intention is to provide the city with a flexible planning tool which can be modified to respond to changing conditions. The system is built upon a sequence of planning and design decisions to be made over the course of the Greenspace implementation process. Key decisions to be made by the City of Norco staff and community members are defined for each stage of the process. The plan view image shown here is a graphic representation of the future greenspace network that will result if the community chooses to implement all of the recommendations made by the 606 Studio.

The basic issues addressed by this plan are:

- Serving the recreational and open space needs of the community.
- Maintaining and enhancing Norco's distinctive community character.
- Assuring the viability of community life support networks, human and all others.
- Providing systematic linkages among trail and wildlife corridors.
- Establishing Norco's role within the regional context, with respect to its landscape and demographic considerations.

The basic goals of the project were to:

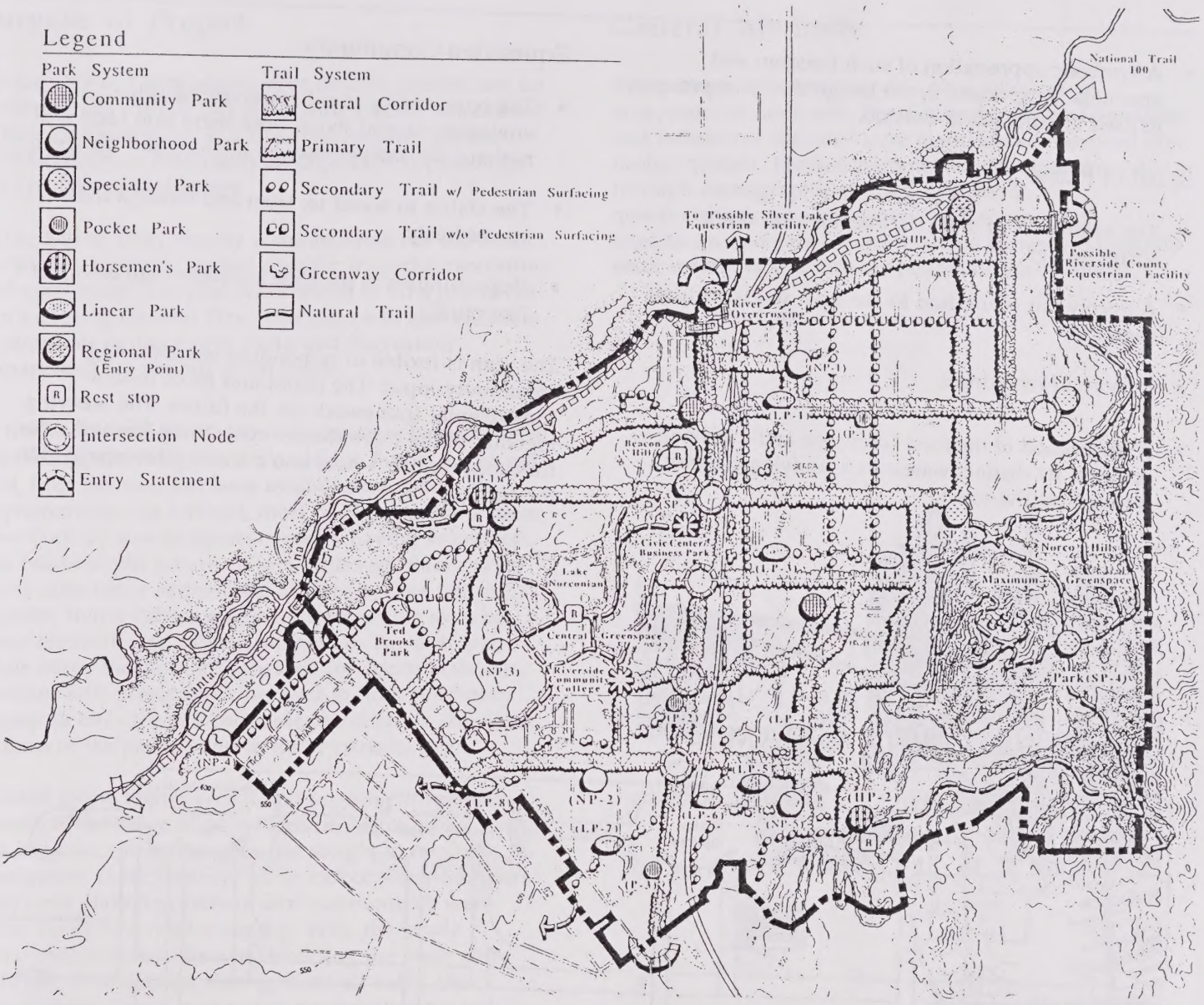
- Serve the recreational needs of the community.
- Provide an organized structure for future park planning efforts, including the location of potential park lands, the possible functions they might sustain, and the order in which all recommended actions should be implemented.
- Inspire community involvement in the planning and implementation process.
- Promote local environmental awareness.
- Achieve a system which will contribute to local economic stimulation through the landscape enhancement of Norco's distinctive community character and the image it aspires to project to the external world.
- Provide a tool for grant funding requests.
- Clarify the legal and economic mechanisms for achieving the desired system.

Issues and goals are presented in an expanded form in Section IV.

Three underlying themes constitute the vital forces of the Norco community and do much to shape its character. These are portrayed as the "Rural Town", the "Spirit of Place" and the "Equestrian Community". These themes are characterized by the following attributes:

Rural Town

- The experience of openness and freedom found in the local hills and the Santa Ana River area and the enjoyment of the convenience and social amenities of a small town.



606 STUDIO

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

A GREENSPACE PLAN

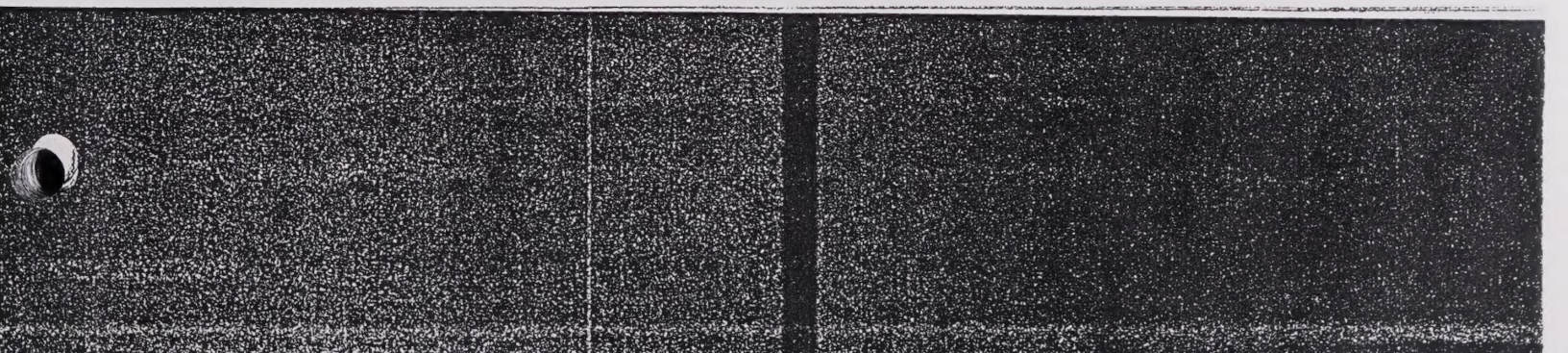
Greenspace for Norco

PARKS & RECREATION DEPARTMENT

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

0 1000' 2000' 4000' 6000'

NORTH



- A symbolic appreciation of such freedom and openness is expressed in the image the town presents to itself and the world outside.

Spirit of Place

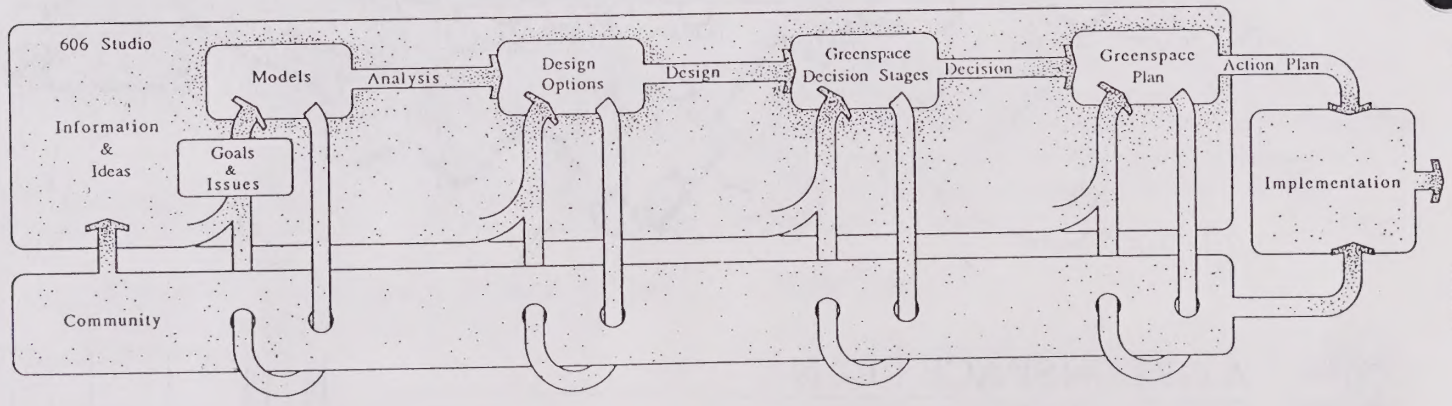
- The awareness of and relationship with one's surroundings.
- A deeply felt connection to the land and its natural character.
- A sense of rootedness.
- A celebration of the local landscape and a striving to draw on its distinctiveness as a unifying element throughout the town.

Equestrian Community

- The opportunity to ride through the urban environment and move from there into local and regional landscapes such as the hills and the river.
- The ability to travel to, from and through these spaces freely.
- Opportunities to socialize outdoors with others of like mind.

The plan is fexible in responding to continuing community input. The issues and goals form a fundamental framework for the future. The weaving together of the three themes contributes life and color, transforming the whole into a living Greenspace Plan for Norco.

PROCESS FLOW DIAGRAM



Purpose of Project

As the City of Norco approaches its 25th anniversary on December 28, 1989, it can do so with a newly envisioned future for greenspace as a cohesive, unifying pattern. This Greenspace Plan offers an organized approach for the creation of that future.

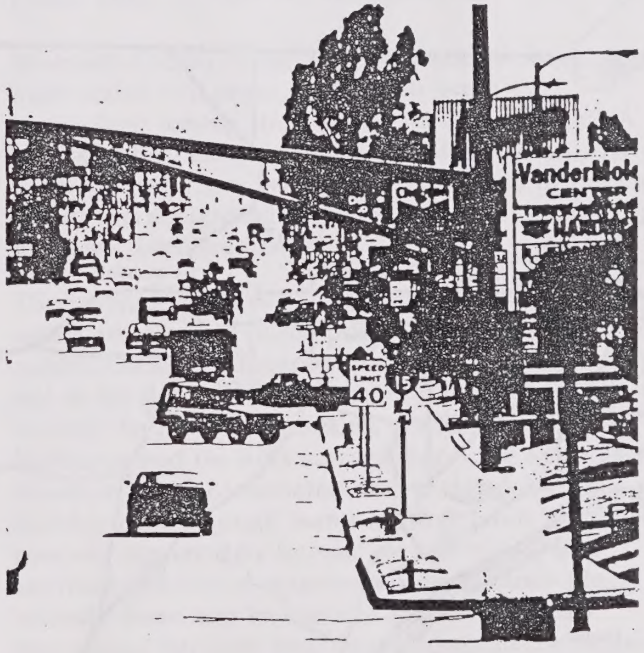
In the Fall of 1988, the city commissioned the 606 Studio to develop a general master plan for its parks, recreation and open space. The plan was needed to fill a gap in the city's existing General Plan. This plan will also facilitate applications by the Norco Parks and Recreation Department for various grant funds.

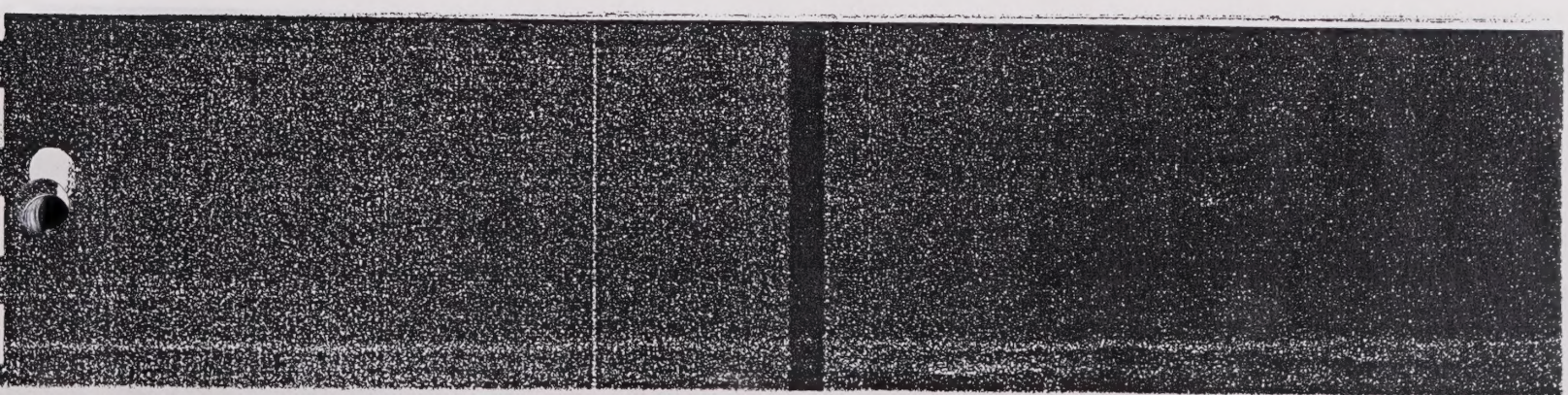
In the last several years, Norco's economic base has been expanding, enriching the city's coffers. But in the recent past, little revenue has been available for civic improvements. As a result, most of Norco's parks have been built by special-interest groups having volunteers and funds to put into the effort. Although the existing parks offer many recreational amenities, they fail to fit together into a cohesive and comprehensive system. Some elements are missing altogether. For example, while many facilities are provided for sports activities, pleasant little picnic spots are hard to find. Aesthetics appear to have taken a back seat to utilitarian functions in most of the parks – and in many parts of town.

Related to the town's recent and ongoing economic growth is the surge of growth in the surrounding areas. For 25 years, the community has sought to retain an uncommon rural identity, while carbon-copy Southern California shopping centers and communities were being stamped out all around it. With the newly completed interstate freeway bisecting the town and rampant development closing in on all sides, the challenge for Norco is to secure a supportive tax base while maintaining and further developing its distinctive community image.

General Methods

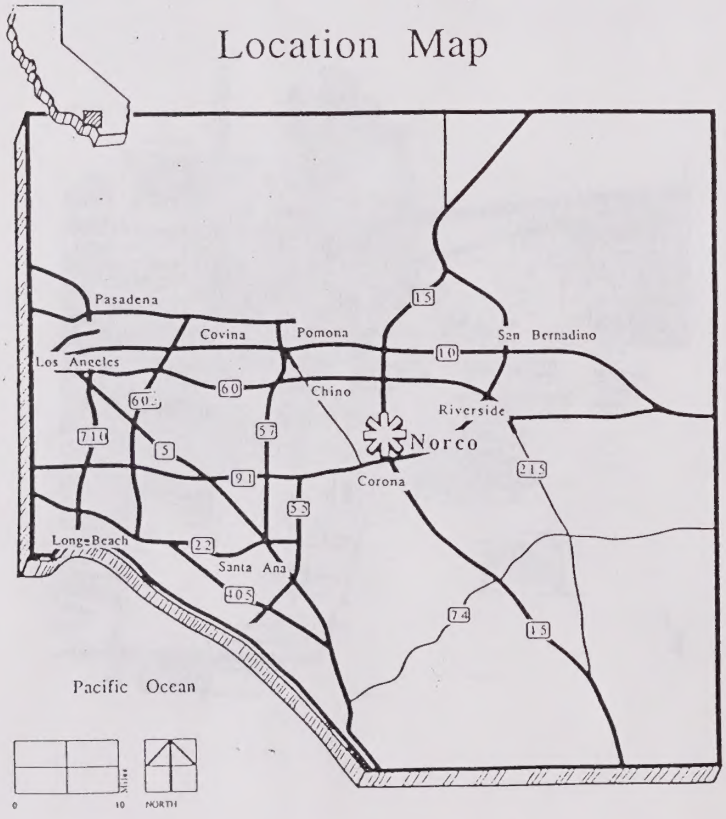
The process of developing this plan followed an ecosystematic approach. Physical and biological processes and features of the land were mapped and compiled into design models. Human parameters were determined through demographic studies, user needs questionnaires, focused interviews, community workshops and casual conversations between 606 Studio team members and various people of the community.





Regional Character

The City of Norco lies in the western Riverside County in Southern California, 50 miles east of Los Angeles. Its region can be defined as the upper watershed of the Santa Ana River which includes a portion of southwestern San Bernardino County. The region is framed by the San Gabriel, San Bernardino and San Jacinto Mountains, rising more than 10,000 feet in elevation to the north, northeast and east of the city, respectively. These form a dramatic backdrop, particularly in winter, when winds whisk the air clear of fog and smog to reveal their white-capped peaks against a brilliant blue sky. Perched on a bluff above the Santa Ana and at a transportation node, Norco is an integral part and could become a focal point of its region.



The Santa Ana Mountains to the south and the Chino Hills to the west complete the framework and restrict the climatic influence of the Pacific Ocean upon the region. It is between these two obstructions that the Santa Ana Canyon passes as it enters Orange County. Potential floodwaters are held above the canyon by the Prado Dam, whose enormous capacity includes a riparian basin and perennial wetlands. In Orange County, the Santa Ana River channel finally meets the sea, about 120 miles from its headwaters near Mt. San Gorgonio, Southern California's highest peak.

On crystalline winter days, the landscape throbs with vibrant contrasts, the vertical mountains jutting abruptly from their steep canyon bottoms, California Fan Palms against the snow covered ridges. Along the flood plain of the Santa Ana, the forms of those peaks are echoed in the much smaller, rather curious conical hills that jut up from the valley floor, singly and in groups. Norco is nestled among a group of these hills.

At close range, the rugged appearance of the hills, with their granite boulders jutting out at all angles, may rightfully draw the traveler's attention away from the taller mountains. The relatively low-growing, shrubby habit of the indigenous plants of these hills conspires to reveal the topographic beauty of the land itself.

As in most of Southern California, the climate of the region is dry, Mediterranean in character, receiving an average of about 13 inches of rain per year in the lowlands, with virtually no rainfall in the summer. Although the region's temperatures are generally mild, its interior placement makes it more subject to extremes than the coastal cities.

The topographical barriers effectively cut off the marine influence 85% of the time, when the weather is dominated by the continental air mass. Consequently, many of the lowland areas are subject to winter frosts, and summer days may range 10 or more degrees higher here than on the coastal plain.

Another effect of this placement is to entrap smog in the basin. But in winter, the Santa Ana winds often swoosh the muck out to sea, to reveal the grandeur of the landscape. The smog situation is not helped by the daily flood of autos on the Riverside, Pomona and San Bernardino Freeways. Vast numbers of people in the region commute to jobs in Los Angeles and Orange Counties.

Riverside County has reputedly become the fastest growing county in the nation. A part of the so-called "inland empire," it has attracted droves of home buyers from the coastal communities, particularly Orange County, where housing costs have soared. The region boasts affordable housing which might otherwise be unavailable in the coastal cities to many of these families, often first-time buyers. Many of these buyers have grown up in coastal Southern California and have their roots there. More importantly, the bulk of the employment opportunities lie in the coastal economies, which continue to grow themselves. Hence, the daily exodus.

Not all of the region's land is currently being carved into subdivisions, however. Much of the western Chino Basin aquifer, directly north and northeast of and including Norco, is covered with ranches, particularly dairy. But, in time, this landscape will unquestionably change.

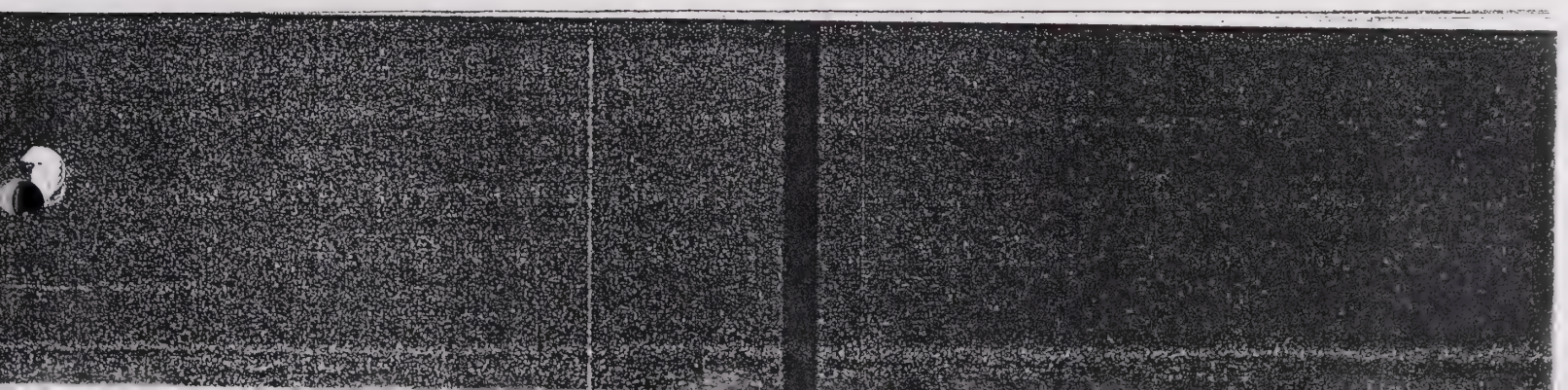
Section II

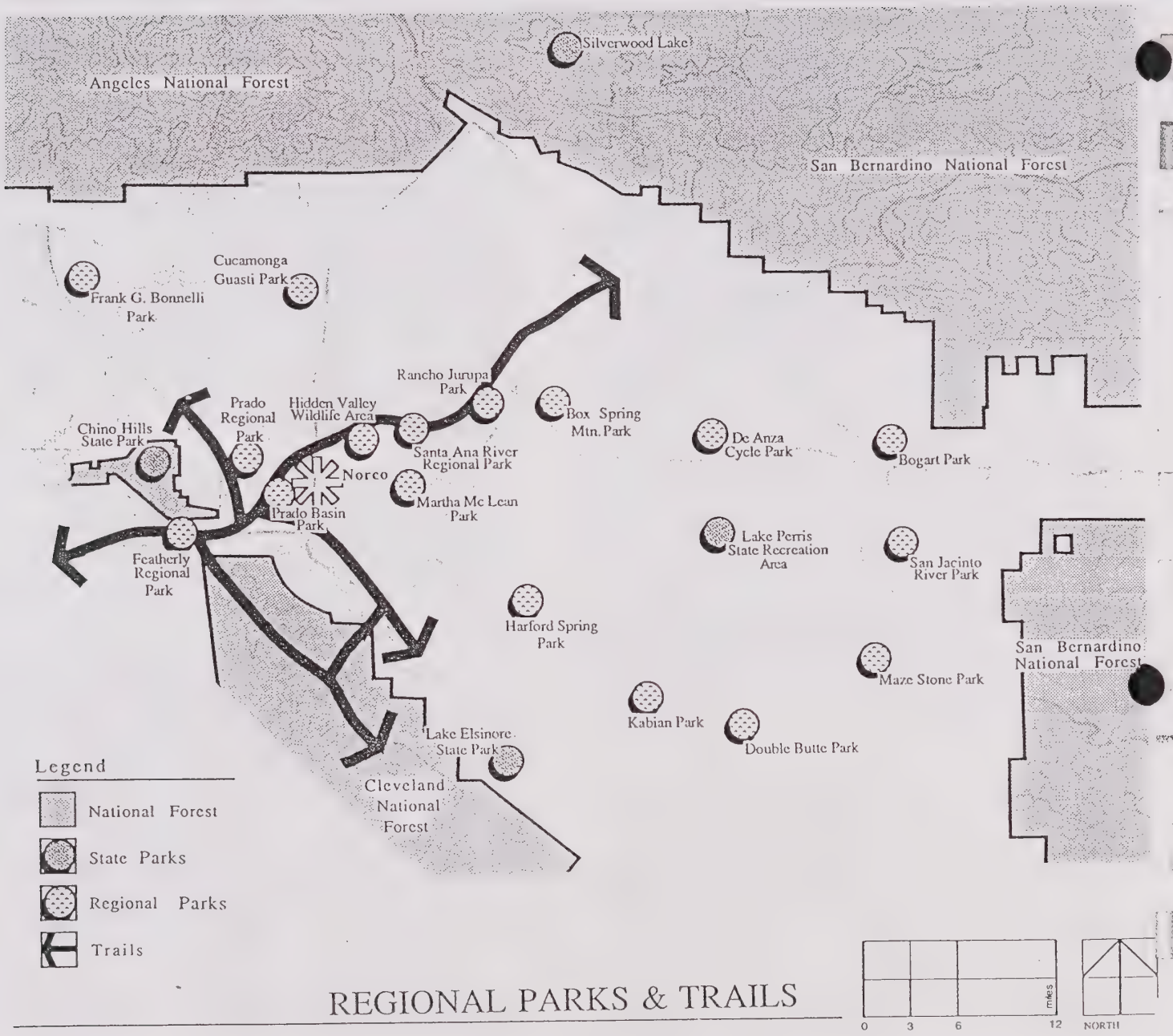
Regional Natural Areas

A fair amount of the uplands encircling the region are under state or federal management that keeps them in a more or less ecologically natural state. The San Bernardino National Forest spans the San Gabriel, San Bernardino and San Jacinto Mountains. Included in these are the Cucamonga, San Gorgonio and San Jacinto Wilderness areas, respectively. The Trabuco District of the Cleveland National Forest encompasses most of the higher peaks of the Santa Ana Mountains. Within this district lies the San Mateo Canyon Wilderness Area. Chino Hills State Park conserves a sizable portion of the Chino hills.

Riverside County is currently preparing a master plan of trails which will begin to establish many vital connections among these managed natural areas. A proposed trail running the length of the Santa Ana River from the San Bernardino mountains to the Pacific Ocean was designated National Trail #100 in 1976, but has never been completed.

The remaining undeveloped uplands in the region which are not held in the public trust encompass the majority of the curious, boulder-encrusted hills poking out of the flood plains. In addition to Norco's hills, these include the Jurupa Mountains, the Pedley Hills, Mt. Rubidoux and the hills surrounding Lake Mathews; however, much of the latter area is slated for development. Though many of these lands have been severely degraded by human use and abuse, they continue to serve as reservoirs of indigenous plants and animals; these may be considered as ecotypically transitional between their homologues in the adjacent coastal or desert environments. As such, their potential genetic significance to the regional ecosystem may be of greater importance than generally recognized.

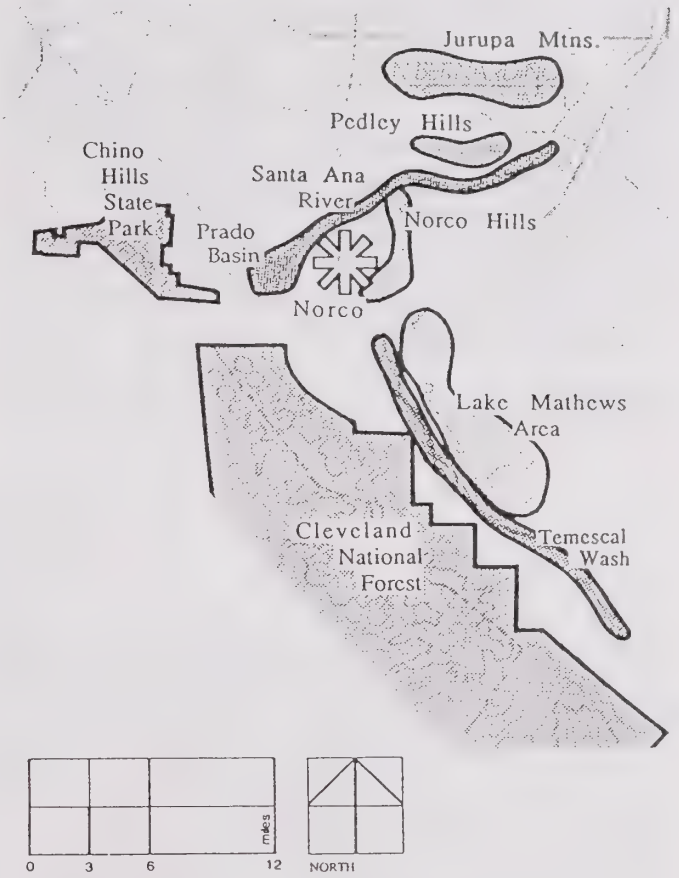



Silverwood Lake
Angeles National Forest
San Bernardino National Forest
Cucamonga Guasti Park
Frank G. Bonnelli Park
Rancho Jurupa Park
Prado Regional Park
Hidden Valley Wildlife Area
Box Spring Mtn. Park
De Anza Cycle Park
Bogart Park
Chino Hills State Park
Santa Ana River Regional Park
Norco
Martha Mc Lean Park
Prado Basin Park
Lake Perris State Recreation Area
San Jacinto River Park
Featherly Regional Park
Harford Spring Park
San Bernardino National Forest
Maze Stone Park
Kabian Park
Double Butte Park
Lake Elsinore State Park
Cleveland National Forest
Legend
National Forest
State Parks
Regional Parks
Trails
REGIONAL PARKS & TRAILS
0 3 6 12 miles
NORTH

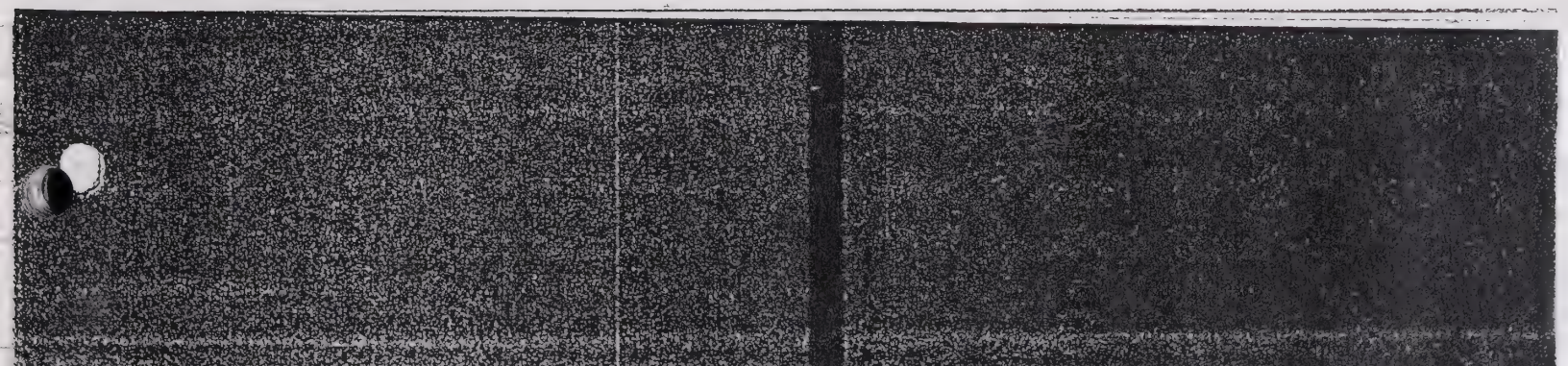
The Santa Ana River corridor falls just short of connecting the first four of these areas. Temescal Wash, running between the Lake Mathews area and the Santa Ana Mountains, drains its floodwaters into the Prado Basin, along with the Santa Ana and other waterways. The wash carries significant natural areas to the southern boundary of Corona, where it is scraped bare of vegetation and harnessed in a glaring concrete channel until it is once again set free into the basin.

It is noteworthy that Norco's northern border, along the Santa Ana River, lies on the only lowland stretch of the river that has not been channelized in any way. As it flows southwest from Mt. Rubidoux, it meanders through its flood plain, flanked by willows and cottonwoods and rich with wildlife. Along this stretch, the most obvious sign of human meddling with the river environment is the Giant Reed, Arundo donax, whose invasive habit has allowed it to take over the understory of most of the riparian woodlands here.

This disruptive invader reputedly impinges on the habitat of the Federally Endangered Least Bell's Vireo. The vireo along with the Yellow-billed Cuckoo, a Proposed Federal Endangered species and numerous other fauna and flora, make homes or take refuge along this corridor west of Norco. Here, the assemblage enters Prado Basin, where the rich wood- and wetlands *almost* connect with the Santa Ana Canyon and Chino Hills State Park.



REGIONAL NATURAL AREAS

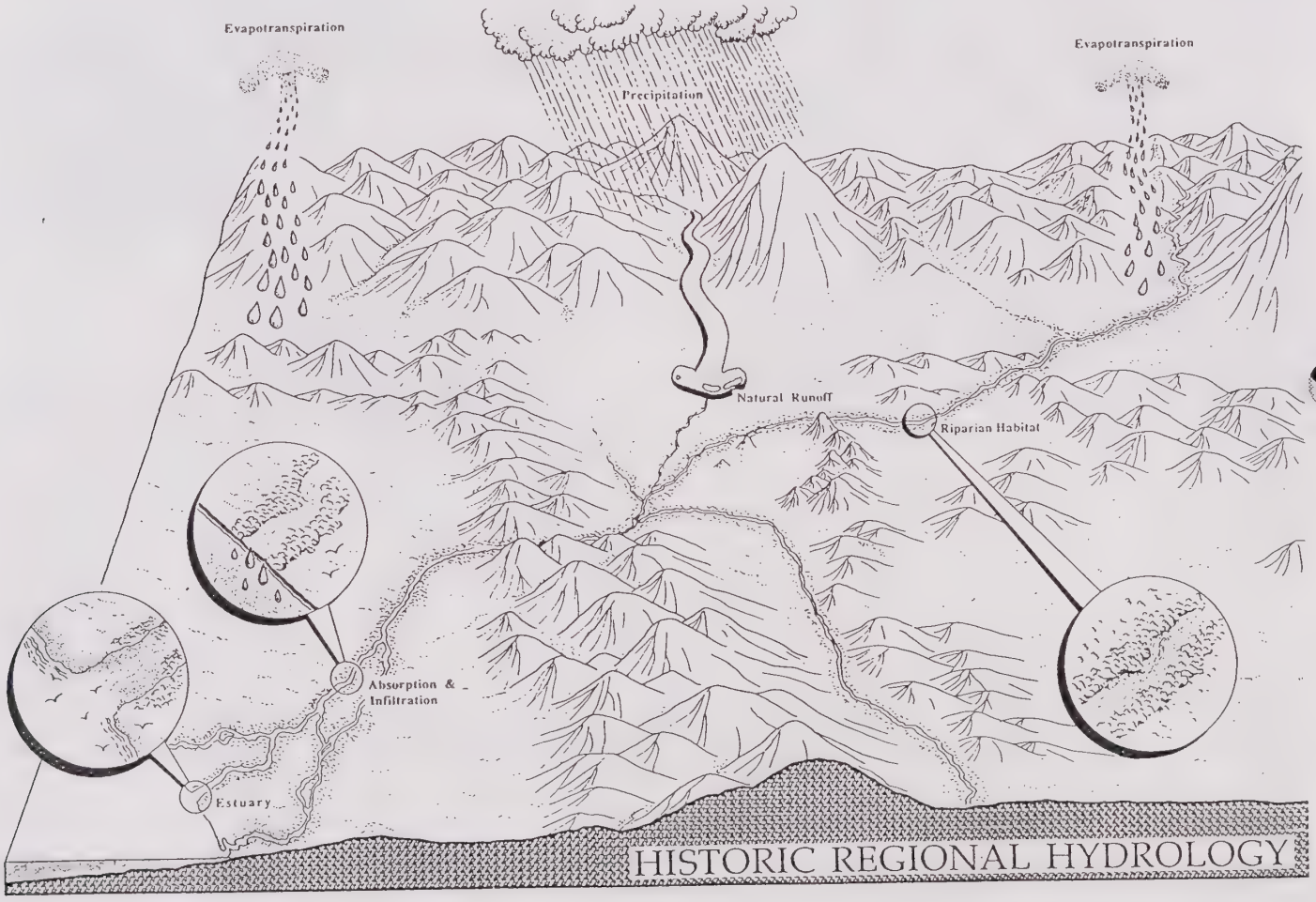


Regional Hydrology

The Santa Ana River, with its enormous watershed is a geographic, historic and social link among the Counties of San Bernardino, Riverside and Orange. This river has played a starring role in shaping the regional environment. This fact may not be immediately apparent to the casual observer who may encounter the Santa Ana as a "river of sand" in late September. The river enabled the settlement of the region and was not always waterless in September.

Irrigation extractions had profound impacts on the Santa Ana River itself and the riparian woodlands native to its banks. With its tributaries re-routed into irrigation channels and dams, the forests of cottonwood and willow perished. The river was transformed from the continuously flowing waterway and assumed the seasonal, off-and-on character, with cessation of summer flows, that we see there today. Smaller tributaries became seasonal or disappeared altogether except in periods of flooding.

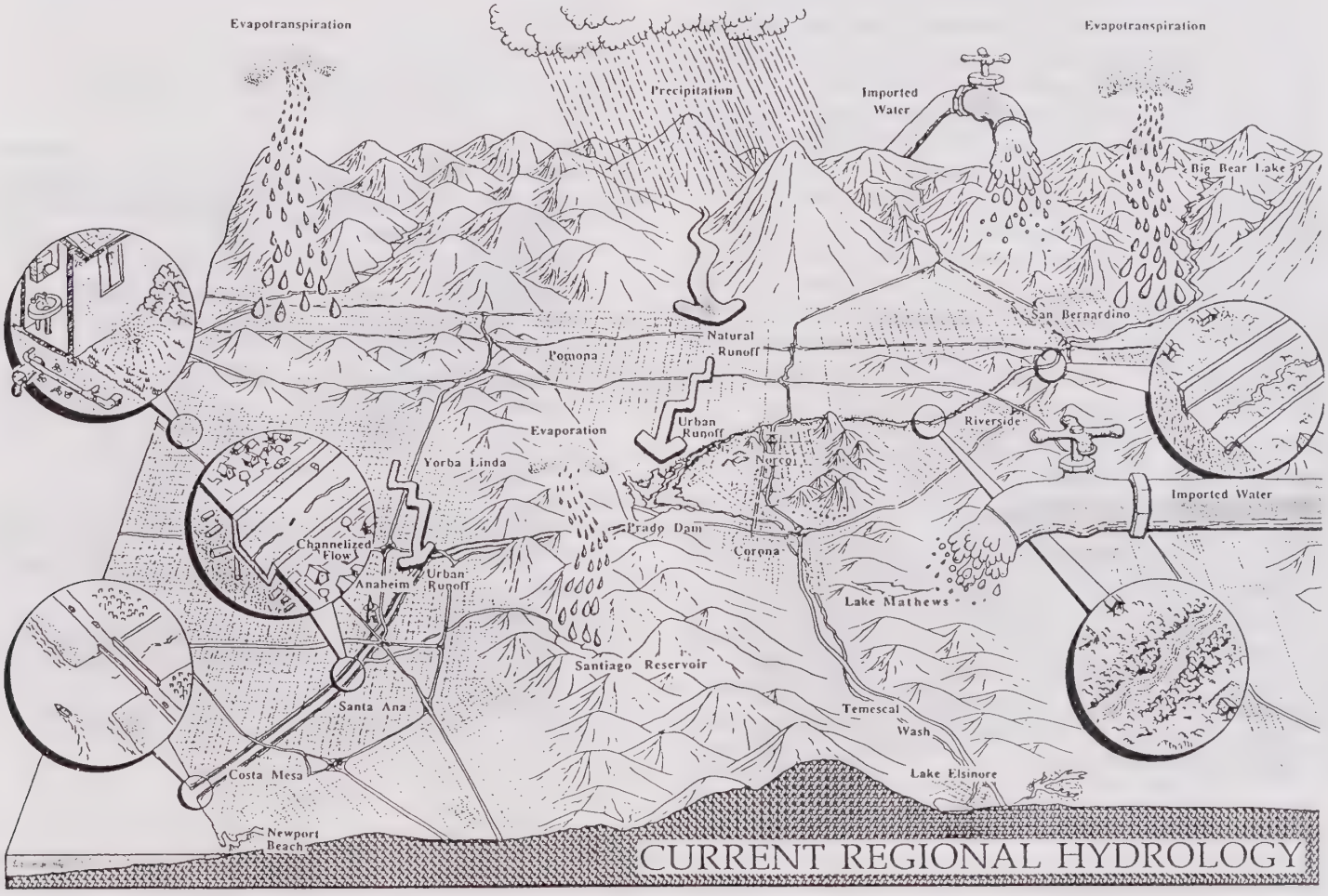
Orchards became the most prevalent agriculture in the area, converting river terraces from Redlands to Anaheim. Other agriculture in the area included vegetable and berry farming along with dairy, turkey and chicken ranching. An enormous aquifer, named for the



Chino Basin, lies under much of the southwestern corner of San Bernardino County, extending to Norco and the Prado Basin. Knowledge of the aquifer precipitated the sinking of numerous wells and, with managed recharge, has allowed the storage and extraction of groundwater supplies for much of the area.

The intensive agricultural development in the area has resulted in massive erosion, which has facilitated the invasion of native plant communities by aggressive weeds, many of which were introduced by the settlers. The Giant Reed, Arundo donax, was introduced through its use as a windbreak and for erosion control. Now it has severely compromised the quality of the riparian woodlands and the wildlife they can support. These patterns of erosion and vegetation change have intensified the pattern of drought-flood which characterizes the Santa Ana River.

Urban storm runoff brings a flush of water into the river and, along with it, a host of pollutants from urban areas. Additionally, sewage treatment plants have been built along the river that discharge their effluent into it. They have been known to produce accidental spills of untreated wastes, particularly during peak flow periods. Other human abuses of the river include illegal fills, dumping and off-road vehicle use.



History

Until 1896, the lands of the Norco area lay undeveloped, a remnant of early land grants and ranching practices. In that year the Norco valley was purchased by the San Jacinto Water Company. Initial interest in the area was for the cultivation of citrus, but the soils and temperatures were found to be unfavorable. So in 1926, the land was purchased by Rex B. Clark who intended to divide the 5,409 acres into 5 acre poultry ranches.

Clark is recognized as the founding father of Norco and is responsible for the early form of the community, laying out the streets and constructing the first buildings there. Some of these have survived the subsequent development since the twenties, and some have been lost. One of these still standing is being used today by the townspeople as a Community Center and is one of the most visible buildings in town. This was originally Norco's first school house. Clark also constructed a General Store which has since been torn down. The second floor of this landmark had been home to the "Norco Grill" which is claimed to have been so popular it drew regular patrons from Los Angeles. Another local landmark that is still standing is the Country Junction restaurant. This was originally known as The Red Barn and was a notorious saloon claimed to have been known from Riverside to Orange County for its "...cold beer, country guitars and barroom brawls." ("Norco Facts", no date of publication.)

But the most famous of all of Norco's landmarks, even though it still exists today, has been lost to the community in a different way. The Norconian Club is a grand old resort that was built in 1927 by Rex Clark. It has since become home to a Naval and California Rehabilitation facility and has been declared off limits to the community. The Club is built on the shore of Lake Norconian and, when originally constructed, was a multi-million dollar luxury resort with ninety-seven rooms, a golf course, ball room and a Casino club house on the lake. It attracted the rich and famous from all over the world, and the immense pool on the grounds was used by U.S. Olympic swimming teams for training.

From the very beginings of its development, Norco attracted residents who wanted room to keep horses and animals. Over the course of years, this settlement pattern was enhanced and encouraged by the community, creating the equestrian tone we find there today.

The Community and Its Equestrian Character

The motto, "City Living in a Rural Atmosphere" arches over the profile of a horse on the City of Norco's official symbol. This motto symbolizes a central long-term goal of Norco's community leaders. The voters of Norco have, for 25 years, maintained the majority of their city's land as animal-keeping properties of one-half or more acres. Past City Council members who allowed certain higher density, non-animal-keeping residential developments found themselves summarily dismissed by the voting public.

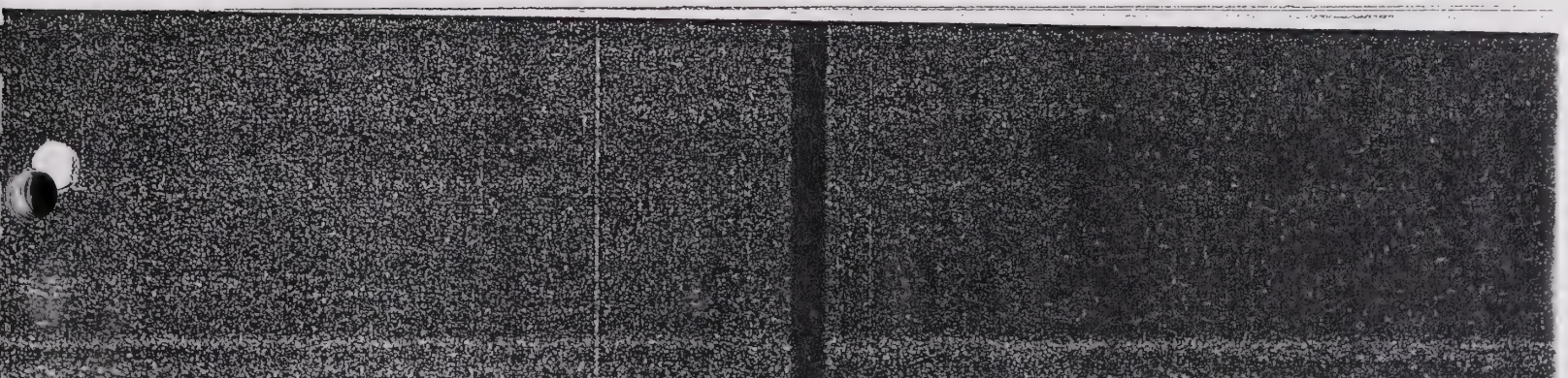
During the 606 Studio's involvement with the city, one of the prominent issues before the City Council was the weekend rodeos a resident was hosting in his several-acre backyard. Concerns included the impacts on the neighborhood of noise and parking. With neighborly spirit and eager to work out a compromise, all involved parties agreed to allow the rodeo to continue, with appropriate mitigation measures.

Testimonies which led to the agreement included impassioned citizen pleas referring to activities such as the rodeo as part of "why we're here – for the open space, the freedoms and family recreation." Those freedoms include, for many, the freedom to do largely what one wishes to on one's own property, without the ordinances, codes, covenants and restrictions common to the scorned homogeneous "planned" communities of Orange County. This is a town of ardent individualists who believe in their particular concept of freedom. The expected freedoms include the right to have a loud party (or rodeo) without inviting the law.

Section III

Rural Character and Recent Development

For some, this freedom means the prerogative to maintain (or fail to maintain) one's yard as one sees fit, within reasonable confines of health and safety restrictions. Individuality of landscape treatment is the rule, superseded only by the regularly spaced canopies of the Tamarisk and Eucalyptus, where they have matured. Unique mailboxes often make a street-side statement about their owners. Liberty is revered here. A six-foot version of the Statue of Liberty lights a driveway along Third Street. A much smaller jockey figure complements her on the opposite side. On the other side of town, a yard on Corydon is graced with linked topiary teddies lining the driveway. On a



miniature hillock stand topiary horses, and the front door is guarded by perhaps the best of all: A five-foot topiary Godzilla who has been seen, on occasion, wearing oversized bright yellow sunglasses.

For some, this freedom allows the collection of rusting junk cars, obligatory in some rural American landscapes. Many others decorate their yards with the antique accoutrements of equestrian-based travel. There are wheels, carts, wagons, plows and reapers in various arrangements – some designed, some serendipitous. These are particularly characteristic features of the east side of town, otherwise referred to as "old" Norco.

Throughout the city, animals often occupy street-front property. Signs reading "Pigs 4 Sale" are juxtaposed with pygmy goats, geese, llamas and emus, and, of course, the horses, which represent the most prominent commonality of the diverse yardscapes. Ingall's Park is a magnet for equestrian events. Breeders still operate several ranches around town. Many other horses are kept for recreational purposes. The city has provided equestrian trail rights of way over most of the city as a commitment to the animal-keeping lifestyle.

While the equestrian influence continues to be strong in the community, some residents fear this character could change if enough of their neighbors give up their horses and pygmy goats.

It is common to hear Norconians refer generally to the east and west sides of town as "old" and "new" Norco respectively. The delineation has always been marked by Hamner Avenue and now is accentuated by Interstate 15, the recently completed freeway bisecting the town. "Old Norco" as one might guess, refers to the part of town that was settled earliest. Not surprisingly, "new Norco" tends to be inhabited by more recent immigrants, many of whom have fled Orange County and may continue to work there.

Landscape "gentrification" in some of the new residential areas is sometimes perceived as the threat of the dreaded Orange County development pattern. The infant Crape Myrtles and Gazanias, common on the west side, do mark a vivid contrast with some of the more mature "homestead" landscapes on the east side. But then, many of those with the fancy front yards believe that their efforts may inspire similar efforts on the part of their neighbors across town.

In some parts of the city, neighbors are more concerned that the large lot sizes may encourage the use of backyards for diesel truck and trailer parking. They fear being overtaken by truckers, as has reportedly occurred in other communities along the interstate truck routes of the inland empire. Because of this fear, the city enacted an ordinance was enacted to limit the number of trucks parked on individual lots. But many of the truckers are equestrians who claim they need their trucks to support their costly equestrian lifestyle. Such issues are never simple.

Not only are the streets of Norco lined with horse trails, but they are not lined with concrete, with the exception of some areas along the main thoroughfare through town. Steadfast in its commitment to maintaining a rural atmosphere, the city has eschewed the standard suburban sidewalk treatment in favor of decomposed granite (and dirt) horse trails. Unfortunately, this tends to put joggers, cyclists, skateboards, wheelchairs, and mothers with strollers out in the street side by side with the cars.

Another rural amenity (or deficit, depending on one's viewpoint) is the absence of uniform street lighting. The lack enables the ready viewing of star-studded night skies, smog conditions permitting. If all the cities in the region were lit so modestly, the Milky Way might become a familiar companion. Unfortunately, there is a commonly held (perhaps accurate) perception of danger in the darkness. Some residents fear that the darkness encourages their youngsters to get into trouble – to evade the law under darkness of night.

Youth

Currently, about 36 percent of the population is under 21 years of age, a percentage projected to drop slightly in the next five years. Half of that population are teenagers. A fair number of children and teens participate in animal husbandry, although this interest is reportedly declining. Many others are actively involved in sports. (Norco is an active community, in general.) For young people who are not involved in either of these activities, there exists a recreational gap not uncommon in many American cities. Teenagers often seek activities that cannot be officially condoned for reasons of liability insurance or other public policies, an example is skateboard parks.

One young man who grew up in Norco complained that there is nowhere young people can go without having to spend money. He offered that, as a non-drinker of alcohol, he has felt pressure to buy drinks if he wanted to play pool. (He spends much of his leisure time now riding a mountain bike around the region.) An anti-loitering ordinance was recently enacted, aimed primarily at discouraging youngsters from "hanging out" in the parking lots of convenience stores and other private properties used as gathering points. And like parents across America, many parents in Norco are concerned about the potential for drug abuse and related crimes among their youngsters, particularly if there are insufficient other diversions to keep them occupied.

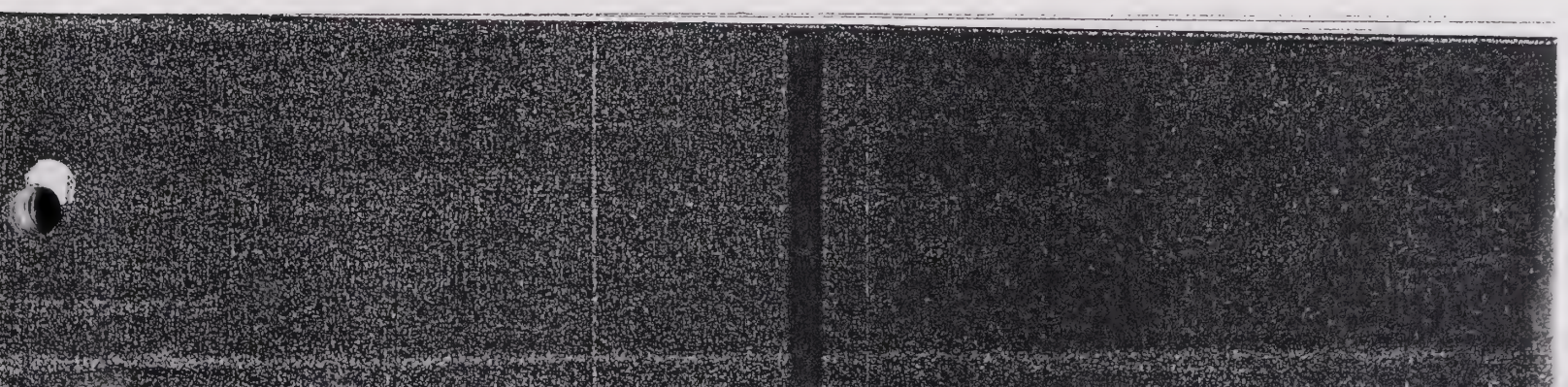
Adults and General Demographics

About five percent of Norco's citizenry are age 65 or older. Many of them reside in a small retirement community near the post office and the local branch of the Riverside County Library. A rich and diverse seniors' program is offered by the Parks and Recreation Department to keep them occupied. The Seniors Center is lively with activity every weekday. Younger adults can participate in a variety of adult sports and fitness programs. Almost six percent of the1980 households in Norco were single-parent families. An unknown percentage of those parents have long commutes to their jobs. Some have verbalized the need for a "latch-key" children's program in town. Other parents have bemoaned the dearth of neighborhood play areas for the youngest children.

With respect to other demographics, the population was almost 90 percent "white" at the time of the 1980 census, with slightly more males than females. Figures for 1988 show the median household income as $36,245, the average as $38,029. Major employers include the State of California Rehabilitation Center (CRC), with 894 employees and 1200 volunteers; the U.S. Naval Weapons Fleet Analysis Center, with 800 employees; and Norco Farmers (eggs), with 245 employees. Riverside Community College is beginning construction of a new branch in Norco and is projected to employ 200 faculty in 1990 and 400 in the year 2000.

Institutions

As large as it is, the Naval Fleet Analysis Center does not make an immediate visual impact, inasmuch as most of it is submerged into the hills of its landscape. From a distance, CRC looks unlike a prison, its most prominentl buildings being those it has inherited from the old Lake Norconian Resort. But if one drives down 5th Street, past the electric fence and



barbed wire, and manned watchtowers observing everything that happens below, one becomes acutely aware of its penal character. The residents of this facility constitute a hidden but sizeable portion of the city's population. Through cooperative arrangements, prisoners sometimes join work crews to assist the city with maintenance chores.

Commercial Character

The city has been actively seeking commercial development to support its tax base. An auto mall is nearing completion. A new central business core is currently under study. A regional shopping center is hoped for. The challenge facing Norco is to develop an economic base without compromising its unique character. Indeed, economic development, if properly planned, would help to manifest some of the character currently absent along Hamner Avenue, in particular.

If the traveler's only encounter with the city is the drive down the treeless glare of Hamner Avenue's existing strip commercial developments, he carries away with a decidedly drab impression. The absence of a sense of a "center of town" is likewise apparent. As one observer who had seen only Hamner Avenue and City Hall remarked, borrowing the Gertrude Stein phrase, "There's no *there* there." A little more "there" exists along equestrian-oriented 6th Street, but even there it could be greatly accentuated. Much of the spirit of 6th Street emanates from the colorful local "characters" frequenting the street. The 606 Studio found considerable "*there*" in Norco, but found it in the people and the features of the land, rather than the existing built environment.

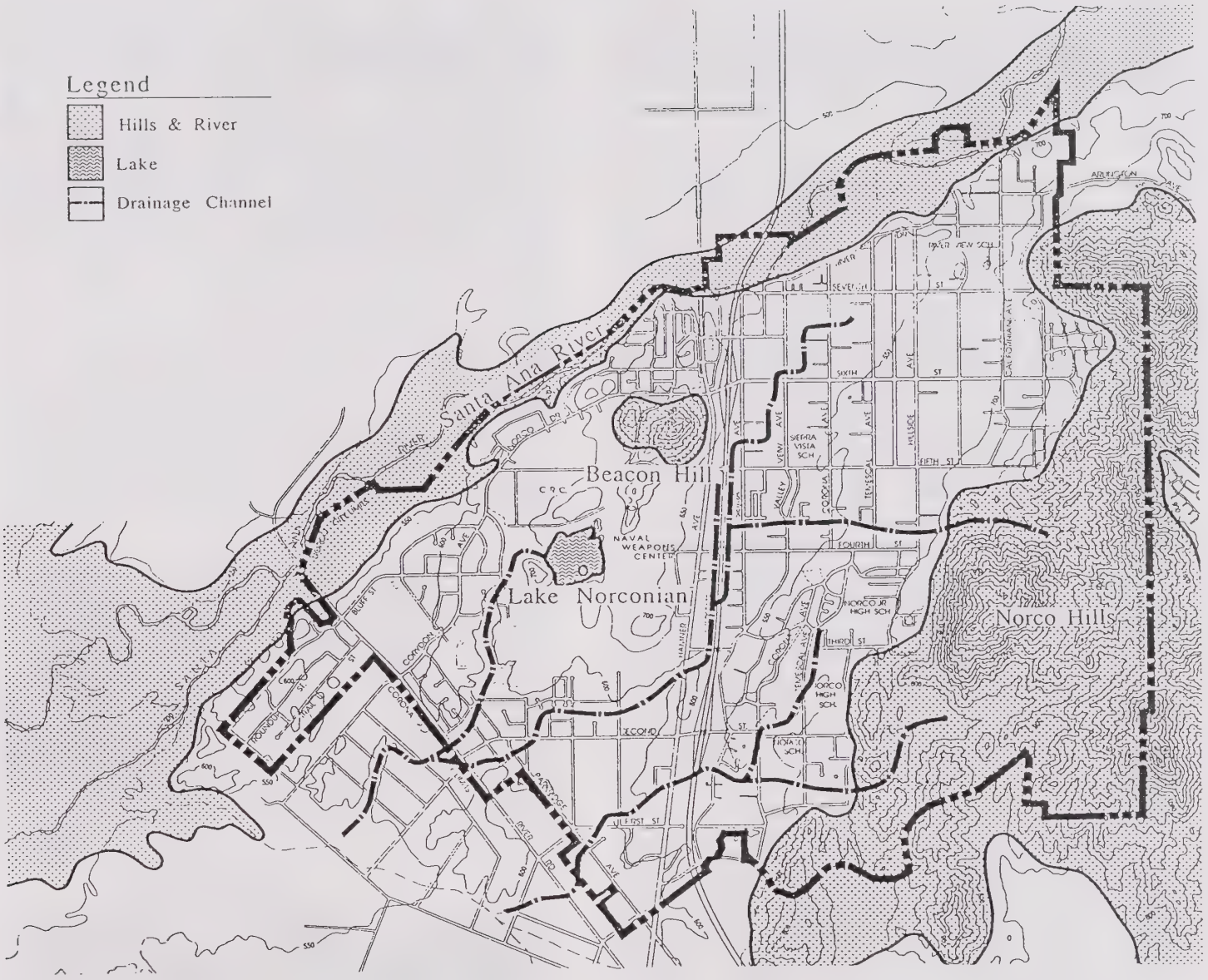
Local Physiography

Norco is blessed with three particularly valuable landscape features: its hills, its position on the Santa Ana River, and Lake Norconian. However, the existing community fabric has fallen short of integrating these features into its weave. Of the relationship between the city and its landscape, one is reminded of the expression "so *near*, yet so *far* ".

The Hills

The most visually dominant of these features are the eastern hills of Norco. On a clear day, these distinct volcanic knobs are noticeable from many miles away, emerging from the flood plain. "Up-close and personal" these boulder-studded hills have as much character as the townspeople. Much of the town rests between the Beacon Hill complex and the larger hills on Norco's eastern border with La Sierra, a district of the City of Riverside. Some maps identify the eastern collection of hills as La Sierra. Approximately 2,000 acres of them lie within Norco's boundary. These shrub and grassland-covered hills occupy a large portion of the viewshed of the city. They are, for the most part, under private ownership, but recreational use has been the common rule here for decades.

As prominent as these landforms are, they bear the vivid scars of years of human abuse. The closer one approaches to Norco's eastern hills, the more shocking becomes the evidence of the ravaging of this land by off-road vehicles (ORVs). In some areas, their relentless tramplings have left whole hillsides with more bare dirt than vegetation. There is also evidence, in some areas, of overgrazing by sheep. The resultant erosion – visible gullies cutting deeply into the earth – is visible for miles. The physical effect is to send more sediments into the



606 STUDIO

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

LANDSCAPE FEATURES

Greenspace for Norco

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

PARKS & RECREATION DEPARTMENT

city's drainageways. To add insult to injury, many of the rusting carcasses of the vehicles responsible for the damage lie decomposing in the canyons, their oil and battery acid wreaking havoc on the tenuous riparian environments there.

Despite such desecrations, the hills retain a wealth of biological and recreational resources. Considerable evidence (graffiti on the rocks above Ingall's Park) suggests that Norco's young people have found their way to the ridge tops to enjoy the 360-degree regional views, which on a clear winter day can be absolutely stunning. La Sierra High School graffiti is evident on the ridge line rocks within Riverside's boundaries. A primitive wooden cross crowned one of the crests until it was snapped by one of last winter's windstorms. Humans have clearly marked their territory up here.

Equestrians and hikers frequent these hills, often following the tracks of the off-road vehicles. But these tracks were definitely not designed with horses in mind, for many of them approach verticality in their ascent of the grade. An ascent so steep may be thrilling in an ORV, but is unnecessarily stressful to humans and their beasts of burden. Equestrians have been observed dismounting to get their animals and themselves safely up the grades. Both horses and humans accelerate the rate of erosion. The gullies become an obstacle course testing horse and human sure-footedness. Still, many users seem to think of these hills and trails as part of Ingall's Park.

Abundant wildlife species also inhabit these hills, but the balance of their natural ecosystems has been disrupted by human intrusion. The highest concentrations of wildlife are found in the springs, seeps and natural drainageways in the bottoms of the canyons. These natural wetlands are clothed in Mulefat (Baccharis viminea), Laurel Sumac (Malosma laurina) and Elderberry (Sambucus mexicana). The wettest spots support thickets of Willows (Salix species). Among their winter-bare branches can be seen various feathered creatures ranging from hummingbirds to raptors. In the shadows of the brush below can be heard the rustling of diminutive creatures seeking refuge and moisture in the verdant oases that remain.

Spring brings a sweet Pandemonium of song to the hills. As a clamor arises from the wetlands, another less confusing symphony is played out over the brush and grasslands. These drier, more open lands attract birds with a different habit, usually ground-hugging species that fly as lower and shorter distances than perching birds. Many have distinctive calls that pierce the silence seductively.

Many a human traveler in these hillsides has been bemused and delighted by the popping up of cottontails seemingly everywhere as one progresses over the land. Jackrabbits also give a start as they bound suddenly out of the bushes and dart across one's path. If the traveler is lucky, she may happen upon a den of coyotes, who fulfill a vital role in the food web of these shrublands.

Although the vegetation has been degraded through human ignorance, much of the indigenous shrub associations remain. California sagebrush abounds in parts of these hills. The scientific name for this plant, Artemisia, recalls Artemis, the Greek goddess of the moon and wild animals. The plant is considered by many cultures a potent healing herb and the volatile scent of its crushed leaves brings a sigh of approval from most who experience it. Artemesia is a representative of the coastal influence upon these hills.

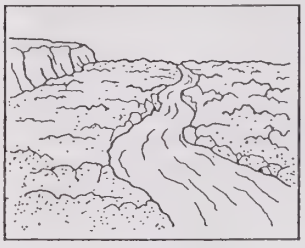
The Desert Encelia, or Incensio, is also predominant here, representing the influence of the continental air mass upon this transition zone. Its felt-like silvery-white leaves contrast boldly with a blue sky and the greens, browns and golds of its neighbors. Chamisal, an especially fire-prone vegetative association composed primarily of Chamise, frequents some of the most windswept slopes. Baby Blue Eyes, pinkish-white Wild Onion, and purple Brodiaea punctuate the hillsides with seasonal color.

While the breezes batter the ridge tops, the canyons provide some shelter. There is, Additionally, a bowl of a valley nestles gently among the peaks, where Elderberry and Laurel Sumac indicate a less harsh environment. The valley is suggestive of a park-like setting, and many Norconians know of it as a resting spot on their horseback rides. In fact, it lies on a potential route to a regional trail connection with the Lake Mathews area.

Aside from casual recreation, grazing has been the primary land use over much of this land. Some granite has been quarried. A Southern California Edison utility easement runs in a north-south stripe across the hills. A subterranean state radio facility is situated on the peak most visible from all of Norco. But the facility itself is invisible unless one is near the top of the hill. Wyle Laboratories, a cryogenics research facility, occupies the largest canyon in the hills. Inasmuch as most of Wyle's property remains as visual greenspace, this land use is highly compatible with the conservation of landscape features. Of major concern to many Norconians is what will become of the rest of the hillside property.

Most of this property is zoned "Hillside", a designation allowing agricultural/residential development at varying densities, depending on slope, but requiring certain guidelines be followed with respect to grading and drainage. Currently, city staff members say that the allowed density is too low to make development of the hills cost-effective. It would probably average two acres per lot. Some estimate that this would allow 400 homes to be built. Realistically, all one has to do to comprehend the likely fate of these lands is to look at the hills of Los Angeles and Orange Counties. The building trends have moved inland.

The Santa Ana River



The second most obvious landscape feature of Norco is the Santa Ana River. In its semi-wild state as it courses along the northern boundary of the city, it represents an adventureland, teeming with wildlife. The energy of this river is manifested in breathtaking drops from the eroded bluffs of Norco's steep banks. The swiftness of the river below can be equally impressive as its hypnotic movement seems to pull one downward.

Norco is truly privileged to have five miles of the most natural segment of the river running along its border. Unfortunately, much of it is inaccessible except by residents with river-front property. Rivertrails Park allows accessibility for equestrians on the east side of Hamner Avenue. But a large sign prohibits, among other offensive behaviors, ordinary hiking unless hikers arrange for a permit from the Parks and Recreation Department.

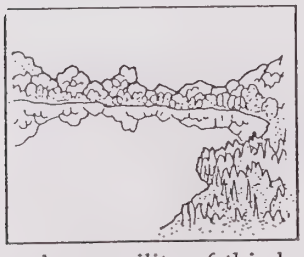
Residents on the west side of town have pointed out that even if they live just above the river, they are unable to ride their horses along the banks, primarily because the steep slopes make riding too dangerous. For other persons, there are simply no access points. Equestrians and others on the west side are prohibitively far from Rivertrails and Ingall's Park with its surrounding hills. Some say that property owners on the west side are relinquishing their horses for want of an inviting place to ride.

Efforts to complete the Santa Ana River Trail may facilitate the construction of a slope-stabilized trail along the bluffs in Norco. A consultant has been hired through an interagency agreement, of which Norco is a part, to plan the completion of the trail. Community workshops will be a part of the planning process. Norconians will have an opportunity to participate in the process and will be invited to express their views on trail location at that time.

Major impediments to travel along the river include its crossings by Interstate 15, Hamner Avenue and River Road, where construction debris, low bridges and other obstructions prevent free passage. The river itself can at times be difficult to cross. Attractions on the far side include Prado Basin County Park, Rivertrails Park rental horse facility, and portions of Santa Ana River Regional Park. The need for safe crossings is apparent.

For a town with so much river-front property, visual access along with trail access to the river is surprisingly restricted . Several opportunities exist to site recreational and related activities such as restaurants in such a way that they fully capitalize on the views of the river and its woodlands.

Lake Norconian



To say that Lake Norconian is the least obvious of Norco's landscape features is an understatement. Many people have grown up in Norco without realizing the lake exists. But once seen, it cannot be forgotten. The rich beauty and tranquility of this landscape seem almost visual non sequiturs, given that a prison lies on one side and a military facility on the other. The undiscovered status of the lake has been made possible because of two conditions: a visual seclusion afforded by the surrounding topography, which includes Beacon Hill, and the high-security land uses at the Naval Weapons Fleet Analysis Center and CRC, between which two facilities the lake is ensconced. If the Navy's security-consciousness did not prohibit cameras in the area, the image of the lake might be a more familiar symbol in the minds of its Norconian neighbors.

Those who are not Navy employees or retirees may get a view of the lake only by driving past the CRC visitors' facility on Western Avenue and proceding up the hill to a parking lot used by visitors and employees of CRC. From this vantage point, one is surprised to encounter a lushly landscaped paradise surrounding a naturalistic water body. Enormous lawns surrounding the lake are neatly manicured by conscientious workers driving large tractor mowers. At the water's edge, the vegetation becomes less tamed as as cattails and rushes form a band of marshy wetland. (This band is kept in control through herbicide applications where it approaches the Navy structures.) Within the lake lies an island, so densely vegetated it appears impenetrable.

From a nearer peninsula, a grand polygon of a building juts dramatically over the water, its glass walls oriented to a 320-degree view of its lush surroundings. This building once housed the casino of Rex Clark's Lake Norconian Resort. Its peaked red-tile roof, white stucco and black wrought iron effect a striking reflection in the blue-green waters below and contribute to the appearance of Mediterranean elegance that was a thematic treatment throughout the resort. Other impressive buildings were part of the resort complex. Some of these house administrative functions for CRC, while the rest are used by the Navy. But the old casino building because of its setting is probably the most eye-catching feature. This building is occasionally opened to wedding parties and other special events, for Naval employees, their relatives and close associates.

Around the shore, a fisherman or two may be seen, hoping to pull in some of the good-sized bass that are supported by the lake ecosystem. Virtually self-

sustaining, the lake apparently needs no stocking. In the past, some anglers have fished from small boats, but that practice may fall to Naval policy changes. The fishing is open to employees of the Fleet Analysis Center, their families and Navy retirees who happen to know about the lake.

A road encircling the lake provides a place for jogging and strolling by Navy employees, the vast majority of whom are civil servants. During the shorter days of the year, these joggers may arouse a flurry as they approach an area inhabited by migratory Canadian Geese, who use the lake as a winter resting ground. Often their flying "V" formation is obscured by thick fogs which settle around the lake and river nearby. Then, their presence is loudly proclaimed by their distinctive honking, eliciting awe from their human admirers below.

The island, off-limits to humans, serves as a wildlife sanctuary. The California Department of Fish and Game is aware of the lake's offerings to wildlife and takes an interest in all activities relevant to the maintenance of that habitat. In the past, when discussions of the lake's prospects as a public recreational facility have arisen, the department has been quick to defend the sanctity of the wildlife habitat. This is not to say that the agency would prevent another use, but rather that it will require assurance that any future recreational uses will be compatible with the conservation of the habitat conditions.

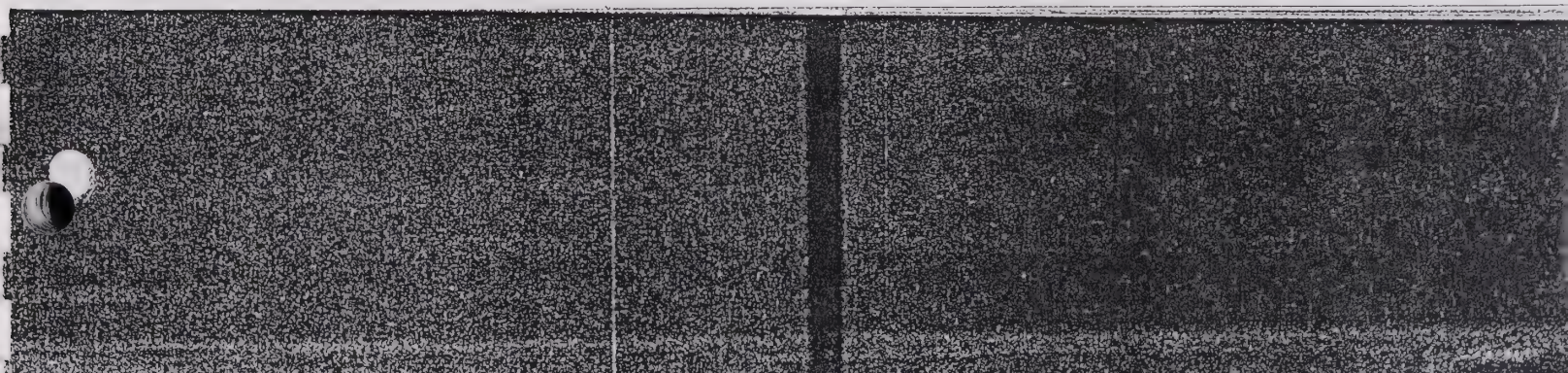
Other attractions around the lake include a small pond and water garden, next to which is situated a tree-shaded picnic area with barbecues. In addition to Navy employees and retirees, some portions of the lakeside property are occasionally opened up to organized groups like the Boy Scouts, at the case-by-case discretion of the Navy. Otherwise, there is very little interaction between the people of Norco and this spectacular gem of a landscape secret. Many townspeople are interested in the possibility of obtaining local control of the lake, or at least the use of it for public recreation. The exclusivity of this Naval "country club" is offensive to those observers, who note that their tax dollars maintain the setting. As one of its outstanding landscape features, Lake Norconian and its surroundings merit greater attention from the community.

Existing Resources

The three major landscape features, the hills, the river and the lake, constitute the most important recreational and aesthetic resources of the City of Norco. A fourth and very important resource is the city's equestrian trail network. An additional resource exists in the drainage channels that traverse the city. These combined elements provide a basis through which a *system* of parks, recreation and open space can begin to take shape.

External Influences

External forces which now have, or will have an influence on the greenspace system include burgeoning development in the areas surrounding Norco, along with the effect that development may have on the local economy and traffic flows through the city. The opening of the Norco campus of Riverside Community College will provide positive opportunities for shared recreational and cultural facilities through an interagency agreement between the city and college. Additionally, the development of a Riverside County regional trail system provides opportunities for trail linkages to diverse locations throughout the region.



Section IV

After reviewing the background information presented in the previous sections, the 606 team arrived at a synthesis of the basic **issues** involved in the development of a program appropriate for Norco. These were:

The recreational and open space needs of the community. Determining the community's wishes and needs was essential to the development of a program.

Norco's distinctive community character. This character would provide a perspective through which to interpret community needs.

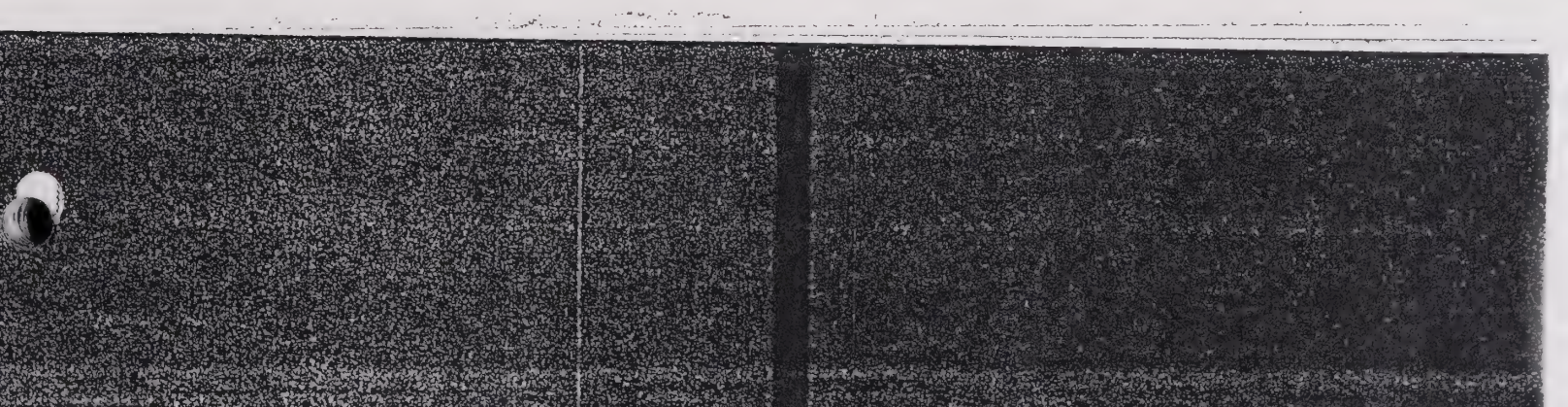
Community life support networks, human and all others. The human community is involved in interdependencies with the community of domestic plants animals, as well as the community of untamed plants and animals. These interdependencies are all, in turn, interactive with the physical properties of the environment, such as soil and water quality. All will be affected by greenspace planning and design decisions.

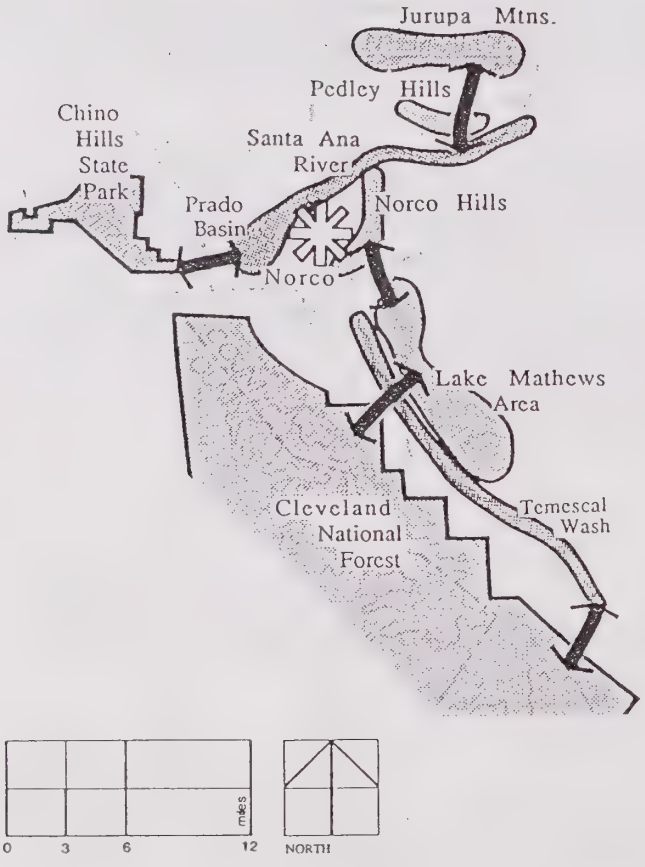
Systematic linkages among trail and wildlife corridors. Inasmuch as the effectiveness of any trail can be increased by connecting it to other trails, the potency of all trails can be strengthened by their organization into a well-defined system. Inasmuch as wildlife corridors are essential to the maintenance of wildlife diversity, a system of corridor linkages must allow for the movement of indigenous species.

The regional context, with respect to its landscape and demographic considerations. Local trail and wildlife corridors will only achieve maximum effectiveness with the establishment of regional corridors and natural areas to which they are connected. Other regional concerns include the visual landscape and the aquifer. Demographic concerns include regional growth and transportation patterns.

The basic **goals** of the 606 Studio were to:

- Serve the recreational needs of the community.
- Provide an organized structure for future park planning efforts, including the location of potential park lands, the possible functions they might sustain, and the order in which all recommended actions should be implemented.
- Inspire community involvement in the planning and implementation process.
- Promote local environmental awareness.
- Achieve a system which would contribute to local economic stimulation through the landscape enhancement of Norco's distinctive community character and the image it aspires to project to the external world.
- Provide a tool for grant funding requests.
- Clarify the legal and economic mechanisms for achieving the desired system.





REGIONAL CONNECTIONS

Regional Connections

Norco's greenspace system, while possessing its own unity and identity is also an integral part of the larger regional landscape pattern. Several opportunities exist to make connections between Norco's greenspace and those of the surrounding areas. Norco's eastern hills bear a familial resemblance to the Pedley Hills and the Jurupa Mountains which currently remain in a largely undeveloped state. If the powers that be in Riverside and San Bernardino Counties take the initiative to secure these prominent landmarks as permanent greenspace, it would not be difficult to make corridor connections between them. If a connection was then made between the Pedley Hills and the nearby Santa Ana River, the link would be made with Norco and Mt. Rubidoux, which both lie alongside the least tamed portion of the river. The river carries the corridor westward into the Prado Basin, and with a little effort, the connection could then be made to Chino Hills State Park.

Moving southward from Norco, the hills surrounding Lake Mathews are almost within "spitting distance" of those bordering Norco and La Sierra. The Arlington Valley, which runs between them, has had its central drainageway channelized. The Riverside (91) Freeway finalized the split between the two groups of hills. Where the U.S.G.S. maps refer to Norco's Hills as "La Sierra", they refer to Lake Mathews' hills as "El Sobrante de San Jacinto", or the "remainder of the San Jacinto Range", emphasizing their position at the western tip of that range.

The Lake Mathews Specific Plan has been approved by the county for the development of the area. Public open space and trails are included in the plan.With a primary county trail running down Temescal Wash and making connections to the Santa Ana Mountains, more corridor

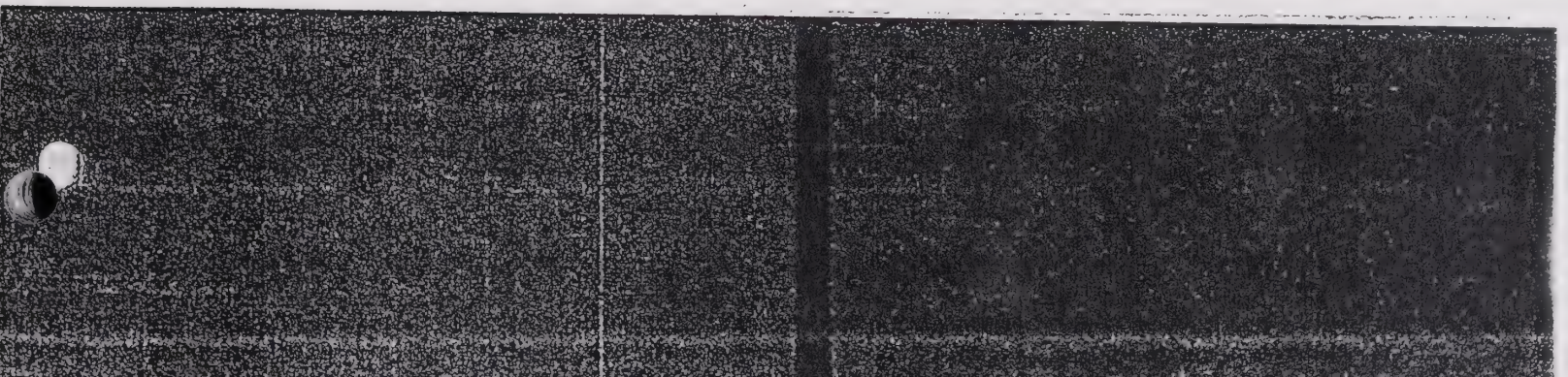
possibilities arise. For many people, a trail running through Norco's hills and El Sobrante would be the preferred way to reach the Temescal Wash county trail, as opposed to one running through urbanized Corona. If a Riverside Freeway underpass had been designed to facilitate a non-vehicular connection between its two sides, a trail connection to the Lake Mathews area would be simple.

Wherever human trail connections are planned (and some places where they are not), every effort must also be made to provide for wildlife corridors. The health of native ecosystems is based, in part, on connectivity of habitat areas which allows for the movement of individuals and genetic populations. Whereas regional trail connections are a recreational amenity for humans, these connections are a vital necessity for the survival of many species of plants and animals. As repositories for the relict representatives of the native landscape, **our parks and open spaces must be connected into systems on a regional basis**, if we expect to enjoy these landscapes and all their inhabitants through the next century and beyond. Trails and wildlife corridors can go hand-in-hand into the twenty-first century.

With some determination on the part of the regional communities, and sensitive planning and design, these connections can begin to be forged.

The Hills

Many features of the eastern hills make them valuable assets to a greenspace system. Their wildlife habitat potential is important enough in itself, but the recreational opportunities offered Norco by these hills are exceptional.



Many equestrians and hikers have already observed that fact and have come to consider these lands as part of Ingalls Park. These rocky hills are definitely an important part of the park's image.

Of primary consideration in the greenspace plan must be the focal areas for wildlife. These focal areas are the linear wetlands associated with the canyon bottoms. Many of these are fed by springs or seeps and offer moisture through the dry seasons to the winged and four-legged ones of the surrounding areas. They also function as travel corridors for many species. Some of the creatures which occupy the shrubby vegetation are dependent on that vegetation for their survival. Additionally, some species may only inhabit the interior of a patch of shrubland. If the patches become too small and "edge conditions" predominate, certain species may be lost altogether. The greenspace system must provide viable habitat for the indigenous flora and fauna.

From a recreational standpoint, these canyon wetlands offer abundant opportunities for wildlife observation. They also contribute interest and variety to the sensory landscape, creating pleasant diversions for travelers as they makes their way up to the ridges. A sequence of different spatial relationships may be experienced as one travels from canyon bottom to ridgetop. Recreational trails must be allowed to traverse the greenspace.

Permitting Norconians and passersby to view the entire region, the ridges of these hills are of incalculable value as public greenspace. Enclosing them to form the yards of just a few families would squander that value. These views are best left accessible to all the people of Norco and the region. The hills are a large part of the view from Norco itself. Prohibiting or restricting ridgetop development would conserve a great deal of the visual wealth of these hills as part of Norco's scenery.

The hills can constitute the backdrop for a regional trail linkage from the Santa Ana River to Lake Mathews and beyond. Along this route, the pleasant and wind-sheltered natural bowl directly east of the radio facility might become a comfortable rest area for a regional trek. It might even be possible to offer limited back-country style camping here. Regardless, accommodations for regional back-country travelers might be provided privately in Norco, somewhere between the hills and the river. The thought of equestrian "bed and breakfast" inns comes to mind.

If all these assets are to be preserved for the people of Norco, any residential or agricultural development which occurs in these hills must be completed with the utmost sensitivity toward the natural ecosystem. Grading and drainage must be accomplished with minimal disturbance of the native vegetation. Managed transition zones will be necessary between wild and domestic landscapes. Guidelines for landscape plantings must require visual harmony with the indigenous landscape, as well as restricting the use of invasive ornamental plants which might "get loose" in the wildlands, overtaking the natives. Application of these precautions will yield a more attractive environment for those who will come to live here.

The Santa Ana River

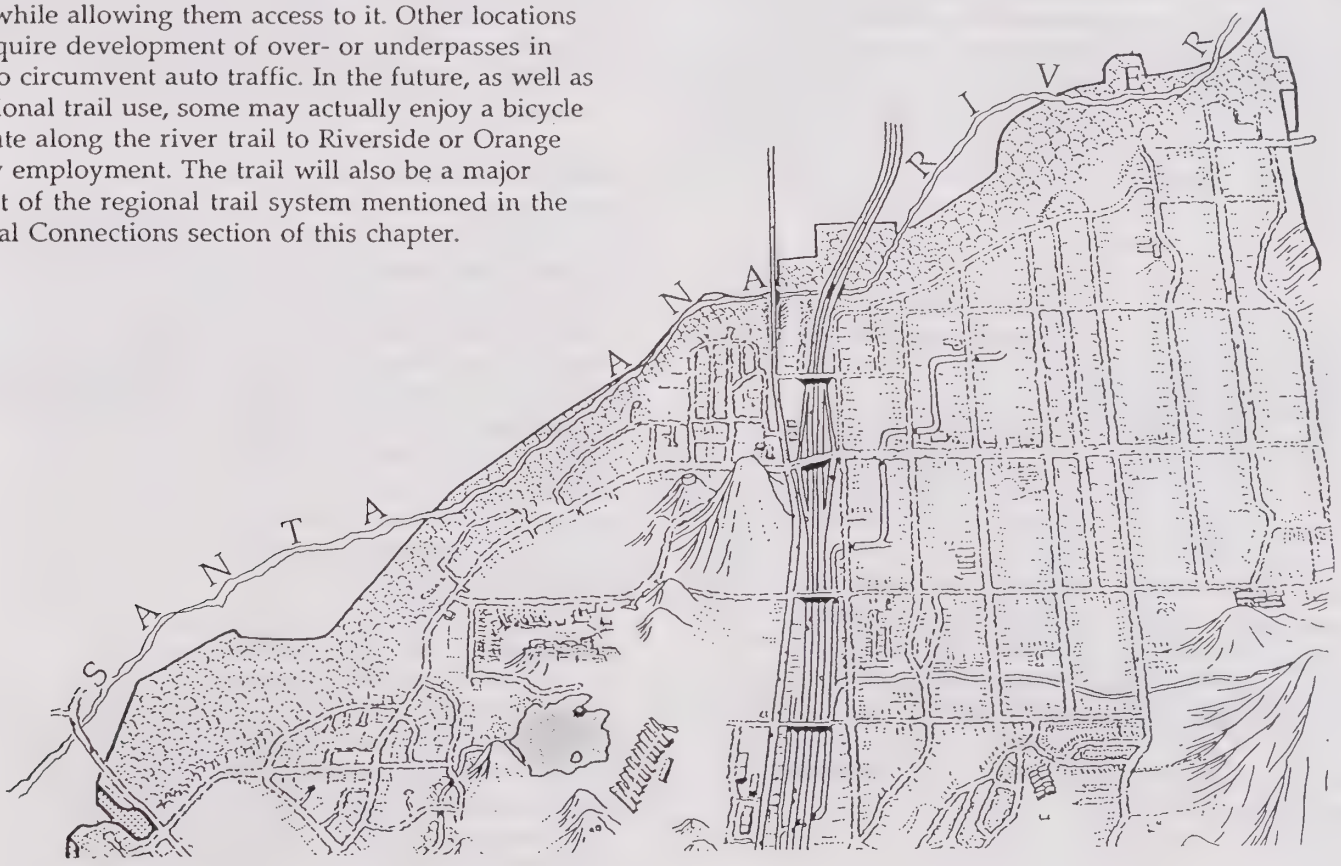
With five miles of rare natural riparian environment running through the town, the fact that only about two miles at one end it are easily accessible by the "out-doorsy" Norconians is rather frustrating. Full recreational enjoyment of the river's offerings can be made possible by furnishing opportunities to travel to, along, and across the river.

All available riverfront properties should be considered as potential park sites. Greenspace located along the river will serve as Norconians' gateways to the river. These will also be the gateways into the city for regional

trail travelers. With the river and its riparian woodlands providing the scenery, these settings offer a lush landscape without excessive maintenance requirements. Because of the river's potential drawing power for recreation-seekers, parks here can offer socializing opportunities for Norco's citizens.

Resolution of the Santa Ana River/Crest-to-Coast Trail will open up vast possibilities for non-motorized travel. The trail will be the most satisfying if it is allowed to run directly adjacent to the river. In certain locations, this will require some engineering along the steep bluffs of the rivers south side. Additionally, the trail must not impinge on the privacy of the residents of the bluffs areas, while allowing them access to it. Other locations will require development of over- or underpasses in order to circumvent auto traffic. In the future, as well as recreational trail use, some may actually enjoy a bicycle commute along the river trail to Riverside or Orange County employment. The trail will also be a major element of the regional trail system mentioned in the Regional Connections section of this chapter.

At least as many elevated river crossings as are available to auto traffic must be made available and useable to non-motorized travelers. The Hamner Avenue and River Road auto crossings would be likely candidates for the addition of pedestrian/equestrian crossings. The Hamner Avenue crossing will facilitate access to the upgraded Rivertrails Park equestrian rental facility. River Road offers entry to Prado Basin County Park. Another crossing might be a "low-tech" seasonal one near the northeastern boundary of the city. The design of these crossings must be sensitive to the requirements of equine sensitivities and allow harmonious integration of other modes of travel.



All trails and amenities incorporated into the riverine environment, must be sensitive to the needs of the wildlife with whom humans share the river. Certain areas must be kept off-limits to humans to allow the wild creatures their privacy. The river can provide outstanding educational opportunities for the students and the public at large. Environmental education sponsored by the city or Riverside Community College can help to lessen the inclination of illegal dumpers and other violators of the environment.

Stories of homeless transients and others frequenting the riverbed have caused concern among city officials and recreational users of the area. An increase in the recreational use of the river will have the effect of increasing surveillance of the area. Emergency telephones might even be installed at strategic locations.

Much can be done to enhance the potential of the Santa Ana River as a greenspace focal area.

The Central Green

In the center of Norco exist several patches of open land which are not presently recognized as being interrelated but which, in fact, can be joined together to form a unit. These lands are referred to here collectively as the Central Green. The central green is comprised of Lake Norconian and the complex of hills surrounding it, extending to Beacon Hill. In addition to these outstanding landscape features, this greenspace holds the sites of the Riverside Community College campus and the proposed Civic Center business park. With its location near the center of town, this area holds great promise for emerging as the nucleus of a community greenspace system.

Beacon Hill

Beacon Hill serves as Norco's central landmark. This prominent knob is visible from most parts of the city, as well as from all the major freeways in the area, as far away as Ontario. Therefore, its visage is of primary importance to the representation of Norco's distinctive visual image, from all vantage points. Although the hill is privately owned, the existing land uses have conserved the upper portion of the hill as visual open space. The summit of the hill is currently occupied by a relay station for cellular telephones, which impacts the visual presence of the hill far less than other land uses might. City staff members informed the 606 Studio that the owner of the upper portion of Beacon Hill's land has expressed an interest in dedicating the land to the city. Such a dedication would ensure Beacon Hill's persistence as a *beacon* of Norco's self-esteem.

Lake Norconian

As was previously suggested in the Local Physiography section, Lake Norconian is the jewel of the local landscape features and like a gemstone, depends on its setting to show it off. The existing greenspace matrix in which it is set forms a backdrop supportive of the lake's tranquil character. The focal points of the lake landscape are the wildlife island, the casino clubhouse and the richly canopied pond and water garden, with its associated picnic facilities at the northeast corner of the lake. This verdant oasis holds great potential as a visual and recreational amenity for Norco, if public access can ever be secured.

Riverside Community College

If Lake Norconian has had a limited notoriety within the town and region, that obscurity is soon to be lost forever, with the opening of the Riverside Community College campus. The proposed site plan for the campus includes generous amounts of greenspace reaching up toward rolling hillocks at the northwest end of the

campus. From vantage points along these hill tops, students and other campus greenspace users will obtain visual access to the lake and will likely become frustrated with their inability to get closer to its cooling atmosphere, especially in the blistering heat of an Indian Summer afternoon.

Another hill at the east campus entrance from Third Street is topped by the ruins of a former residence. The serendipitous leavings include a portion of an old stone pilaster, a decapitated tree trunk, steps leading to the sky and a concrete pad from which much of Norco can be viewed. Although this arrangement was probably not an intentional statement, it provides an artistically interesting symbol upon whose meaning passersby may speculate. Even if this monument falls in the path of progress, its stark image can serve well as a sculptural element of the campus greenspace in the interim.

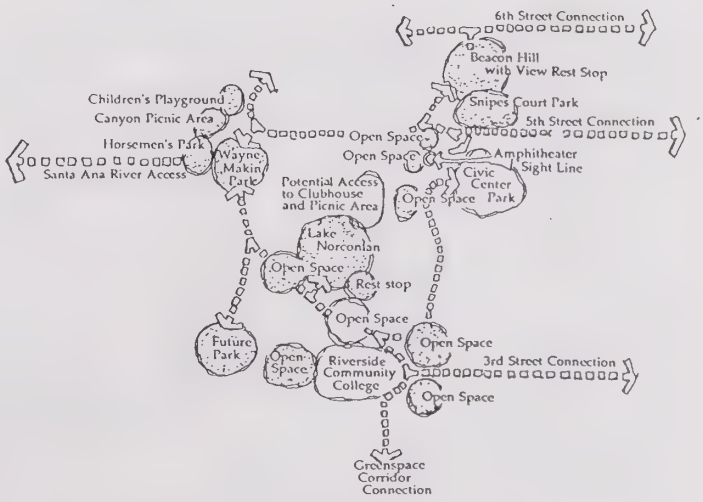
The campus greenspace offers great potential as a link in the community greenspace network. Such a relationship would be mutually beneficial to both the college and the community. Trail linkages could offer alternative bicycle routes to the college as well as routes from it to nearby college-oriented retail facilities. Greenspace linkage can also provide the college with direct approaches to local natural areas which may serve some of the college's needs for biological and geological field experiences.

Civic Center/Business Park

Lying between the RCC site and Beacon Hill is the site for the proposed City of Norco Civic Center and business park, another obvious candidate for linkage into a community greenspace network. In additon to the city offices, the proposed complex is intended to provide the new home for the local branch of the Riverside County Library. As a corollary to the maintenance of Norco's desired rural image, greenspace must be incorporated into the atmosphere of the Civic Center complex which will become a focal point of the community identity. The site's setting provides an appropriate backdrop from which to begin.

The property extends from Hamner Avenue, between Fourth and Fifth Streets, back to the property line of the Naval Weapons Fleet Analysis Center. That portion of the Naval property includes a series of three knolls which conceal Lake Norconian from view. These knolls appear to be echos of Beacon Hill and culminate just across Fifth Street from it, behind the northwest end of the business park site, where the two largest form a double-peaked mound with a central small saddle. This combination of landform and greenspace offers a rich resource from which to draw in establishing the character of the Civic Center business park.

In addition to the visual greenspace provided by its scenery, the Civic Center business complex, as well as other businesses along Hamner Avenue, would benefit from the inclusion of an urban greenspace park or plaza to complete the complex's identity as the heart of the town.



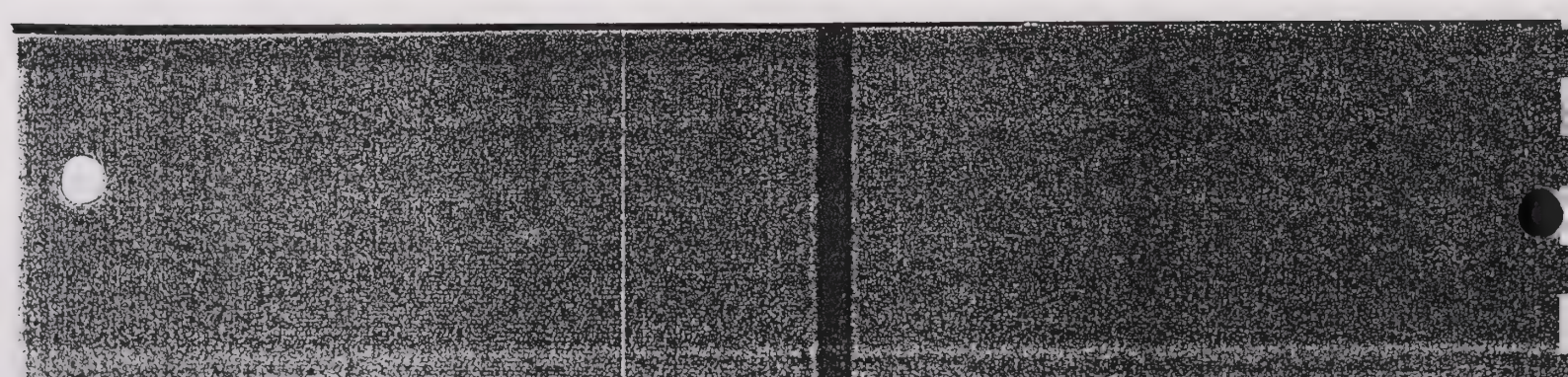
CENTRAL GREEN No Scale

Existing Parks

Park Type	Neighborhood Park	Community Park	Special Use
Use	Provides for daily recreation needs for residents in the immediate area. Provides a variety of low to moderate intensity recreation opportunities. Parks facilities/amenities might include picnic areas, tot lots, hand court areas, limited recreation multi-purpose building, informal play space (not league), and limited service area.	Areas of diverse environmental quality. Greater variety of recreational opportunities for larger recreation service area. Provides either or both passive and active recreation, such as; sports complexes, swimming pools, tennis courts, community serving recreation buildings and conservation of natural areas.	Areas for specialized or single purpose recreation activities, like nature center, display gardens, equestrian arenas, outdoor amphitheater, commercial centers (urban plaza) and golf courses.
Site Character	Suited for intense development. Easily accessible to neighborhood population center. Within safe walking and bicycling distance. May be developed as a school-park facility.	May include natural features like, waterbodies and local hills. Areas suited for intense development. Easily accessible to nieghborhood served.	Within communities
Size	1 to 7 acres	8 to 20 acres	Varies
Service Area	1/2 mile radius	1 miles radius	No standard

Proposed Parks

Park Type	Pocket Park	Linear Park	Conservancy
Use	Areas of medium to high density housing or commercial usage. May include childrens play equipment, city entry feature, small plaza or vest pocket parks.	Area developed for one or more modes of recreational travel, such as walking, hiking, bicycling, horseback riding. May include high to moderate intensity use areas.	Protection and management of the natural/cultural environment with recreation use as a secondary objective.
Site Character	Within commercial areas and in close proximity to apartment complexes, townhouse development or housing for the elderly.	Built in or near natural corridors, such as drainage channels, utility right-of-way, bluff lines, vegetation patterns, and roads. Linking components of the recreation system or community facilities, such as schools, libraries, commercial areas and other park areas.	Varies, depending on the resource being protected.
Size	1 acre or less	Sufficient width to protect the resource and provide maximum use.	Sufficient to protect the resource
Service Area	Less than 1/4 mile radius	No standard	No standard



Regional Park

Area of natural or ornamental quality for outdoor recreation, such as picnicking, boating, fishing, swimming, camping, and trail uses; may include play areas.
Contiguous to or encompassing natural resources
200 plus acres
Several communities, 1 hour driving time.

Regional Park Reserve

Area of natural quality for nature oriented outdoor recreation, such as viewing and studying nature, wildlife habitat, conservation, swimming, picnicking, hiking, camping, and trail uses. May include active play space. Generally 80% is reserved for conservation and 20% for recreation development.
Diverse or unique natural resources, such as lakes, streams, marshes, flora, fauna, topography.
1000 plus acres
Several Communities, 1 hour driving time.

Parks

The following definitions address the spatial, functional and design considerations for parks. These classifications are based on people-oriented factors, including the public's interest in certain types of recreational facilities and programs and their intent to service a particular area. Definitions should serve primarily as a guide to park planning, not as the final determinant of the most appropriate function of a park.

Parks

The following list of existing parks provides the basis for recommendations for future park improvement. In determining the condition of each park the following components were considered: site amenities (structures, picnic tables and shelters and barbecues, etc.), visual appearance, park maintenance (restrooms, fences, etc.) and ground maintenace (lawn and tree/shrub pruning).

Each component was ranked on a scale of 1 to 5 , 1 being least desirable, 5 most desirable. The combined total reflects the condition of each park: 0 to 5, poor; 6 to 10, fair; 11 to 15, good; 16 to 20, excelent. For the park inventory totals, refer to figures ? to ?.

Existing Park

Clark's Field

Location: Corner of Detroit Street and Hamner Avenue.
Type: Specialty.
Size: 2.0 acres.
Condition: Fair (10).

Description: Used primarily for adult baseball.
General Comments: Improvements should include upgrading bleachers, spectator seating and scorebox. Additional amenities might include a drinking fountain and permanent restrooms. Softening the site boundaries using a combination of trees, shrubs and ground cover, and landform buffering is encouraged, specifically along Hamner Avenue.

Community Center Park

Location: 3900 Acacia Avenue.
Type: Community center park.
Size: 15.0 acres.
Condition: Fair (8).

Description: The Community Center Building, Riley's Gym, the Senior Citizen Center and Boy Scouts House provide most of the indoor space for private and public programs and recreational activities in the city. Outdoor recreational facilities include an adult softball field, a swimming pool, a tennis/basketball court, play equipment and four horseshoe pits.
General Comments: Pedestrian circulation throughout the site should be improved to provide ease of access from indoor to outdoor and between indoor facilities. Opportunities to soften the site boundaries using landform or vegetation buffering rather than additional chain link fencing should be considered. Maintaining the aesthetic quality of the park should be of high priority; accordingly, special attention should be given to maintenance, especially tree pruning and trimming.

Ingalls Equestrian Center

Location: Corner of 6th Street and Crestview Avenue.
Type: Specialty.
Size: 44.0 acres (7 acres remaining undeveloped).
Condition: Good (11).

Description: Ingalls Park is considered the premier equestrian facility in Norco. Horse shows, rodeos and

OUTDOORS
Parks & Recreation Facility Inventory

	Parks	Type	Acres	Baseball-Adult	Baseball-Little League	Basketball	Equestrian Trail	Football	Riding & Show Arena	Horse shoe Pit	Shuffle board	Soccer	Softball-Adult	Softball- Informal practice	Softball-Youth	Stage/Exhibit Bldg.	Swimming Recreation	Tennis	Warm-up Arena
Existing	Clark Field	specialty	2.0										1						
	Community Center	community	15.0			1				4	2		1				1	‡1	
	Ingalls	specialty	44.0						1							1			•2
	Kips Korner	neighborhood	1.8				yes											‡1	
	Neil Snipes	community •	15.0				yes												
	Parmenter	specialty	4.5										‡1						
	River Trails	regional	277.0				yes												
	Ted Brooks	specialty	1.4																1
	Wayne Makin	specialty	21.5	•1	‡2		yes	3				‡5		1	‡2				
	Total	—	382.2	1	2	1		3	1	4	2	5	3	1	2	1	1	2	3
Planned	Possible Equestrian Facility	N/A	N/A	Facility status unknown															
	No name Tract	neighborhood	1.7																
	No name North of Ingalls park	N/A	7.0																

•currently being redesigned

‡day and night use

‡three large field & two mini field

‡space for additional tennis court

•seventy-six existing stalls, three hundred new stalls proposed

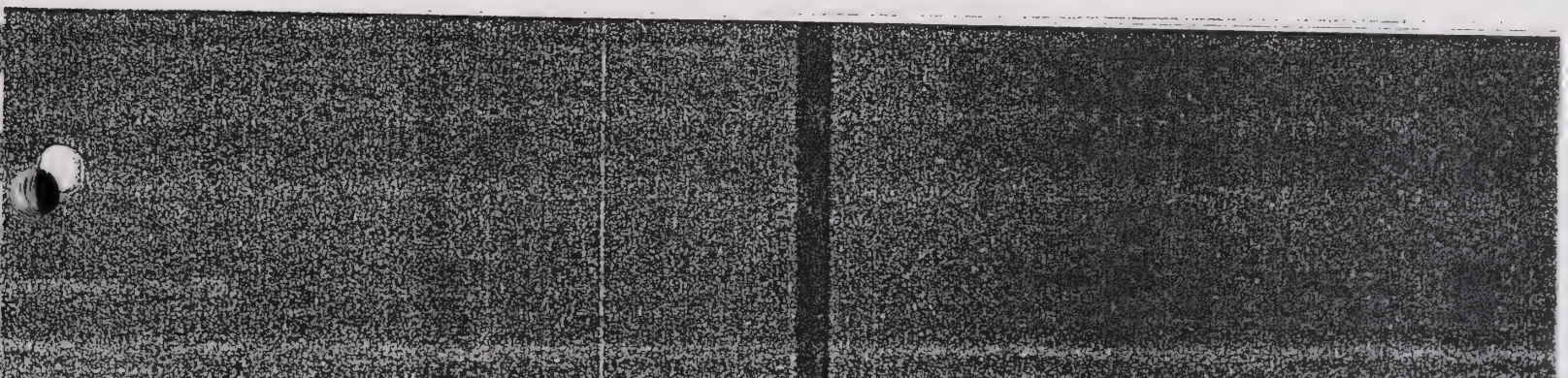
SITE AMENITIES
Parks & Recreation Facility Inventory

Parks	Auto-Parking (on-site)	Auto-Parking (on-site Proposed)	Auto-Parking (off-site)	Benches	Bicycle Parking	Drinking Fountain	Restroom	Handicap Access	Security Light	Telephone	Trash Receptacle
Clark Field	37		14	yes		1	yes				yes
Community Center	200	97			yes	2	yes	yes	bldg.&park		yes
Ingalls				yes							yes
Kips Korner			24			‡1	yes		tennis		yes
Neil Snipes	33	32		yes		1	yes				yes
Parmenter	‡31								parking lot		yes
River Trails									corral		
Ted Brooks			10				yes				
Wayne Makin	145	140	70			3			bldg.&park	1	yes
Total	446	269	118			8				1	

• portable
‡ aditional 20 spaces can be provided
‡‡ drinking fountain not working

INDOORS
Parks & Recreation Facility Inventory

Parks	Badminton	Basketball	Gymnasium	Multipurpose Room	Program Space	Recreation Building	Restroom	Snack Bar	Volleyball	4-H Show Barn
Clark Field										
Community Center	4	3	1	1	1	1	2		3	
Ingalls							1	1		1
Kips Korner										
Neil Snipes							1	1		
Parmenter							1	1		
River Trails										
Ted Brooks										
Wayne Makin							2	2		
Total	4	3	1	1	1	1	7	5	3	1



PICNIC & PLAYGROUND
Parks & Recreation Facility Inventory

Parks	Barbecue	Picnic-Family	Picnic-Group	Picnic Shelter	Play ground Equip. Tot Lot
Clark Field					
Community Center	3	9		3	yes
Ingalls	1	1			yes
Kips Korner					yes
Neil Snipes	•	•	•	•	yes
Parmenter	3			3	yes
River Trails					
Ted Brooks	3				
Wayne Makin	1		2		yes
Total	11	10	2	6	
future barbecue, picnicking facilities					

SCHOOLS
Parks & Recreation Facility Inventory

	Schools	Acres	Baseball	Basketball (indoor)	Basketball (outdoor)	Football	Raquetball	Soccer	Softball	Swimming Pool	Swimming (competition)	Tennis	Track	Volleyball (indoor)	Volleyball (outdoor)
Existing	Norco High	40.0	2	3	6	1	4	1	1	1	1	6	1	3	2
	Norco Jr. High	27.5	1		4	1			1			4	1		4
	Norco Elem.	10.0	3		3				2						
	River View Elem.	8.1	2		4				2						
	Sierra Vista Elem.	10.6	2		6				1						
	Highland Elem.	10.0	1		1				2						
	Total	106.2	11	3	24	2	4	1	9	1	1	10	2	3	6
Planned	Riverside Community College	2.5 acre park will provide play equip. picnic tables & barbecue facilities. Joint use facilities include softball, soccer & football fields and swimming pool, tennis & handball court.													

other equestrian-related activities attract participants from Riverside County and as far away as Orange, San Bernardino and Los Angeles counties. Expansion plans are in progress so that Ingalls will be able to accommodate larger horse shows. Expansion will include an additional 300 new stalls, raising the the combined total to 376. Facilities now include a show arena, two warm-up arenas, two 4-H barns and the Nellie Weaver Hall. The 4-H barns provide space for showing and training animals, while Nellie Weaver Hall accommodates exhibits, dances, wedding receptions and banquets. Ingalls has also become the site for the annual Valley Days Fair. Another special feature of Ingalls that it provides trail access into the surrounding Norco hills.

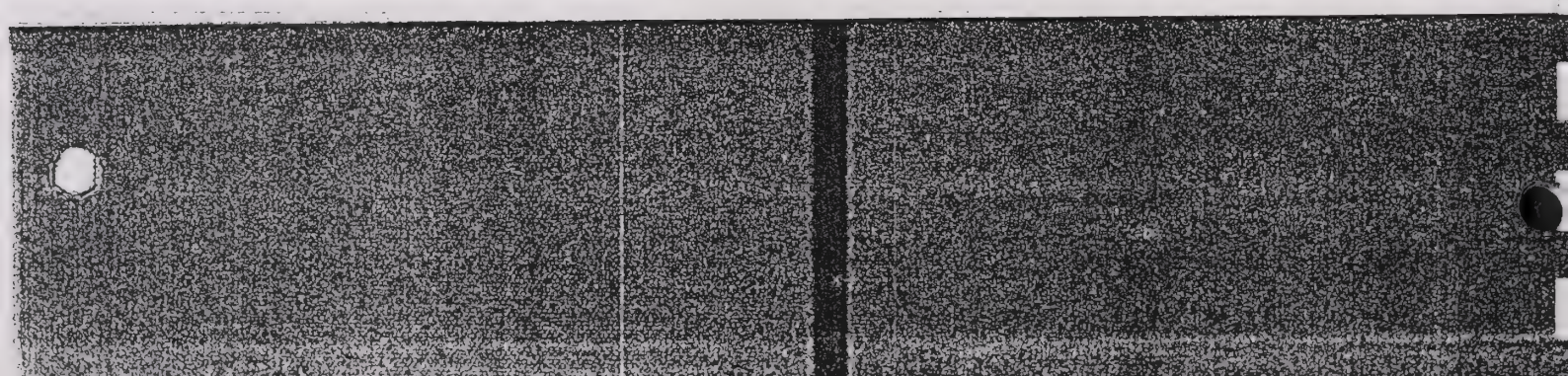
General Comments: Nestled in the foothills of the Norco hills, Ingalls has become a symbol representing the city's animal-keeping character. The hills provide an attractive backdrop enhancing the city's rural character. Future design consideration should address the pedestrian, equestrian and vehicular circulation in and around the park. Relocating existing facilities may provide greater ease of access. The undeveloped seven acres located north of Ingalls creates a good opportunity to link the two parks; such linkage could enhance the visual aesthetic and function of each park. It would also be possible to take advantage of 6th Street by creating a focal point as people enter the park.

Kips Korner Park

Location: Corner of Kips Korner and Parkridge Avenue.
Type: Neighborhood.
Size: 1.8 acres.
Condition: Good (13).

Description: Recreational facilities here include children's play equipment (tot lot) and a tennis court. There is limited opportunity for low-intensity or informal play in the other areas.

General Comments: Kips Korner is a good example of the atmosphere or flavor a neighborhood park might have. "Soft green" elements, as in the grass-lined



606 STUDIO

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

PARKS & SCHOOLS

Greenspace for Norco

PARKS & RECREATION DEPARTMENT

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

0 1000' 2000' 4000' 6000'

NORTH

drainage channel, elevate the park's visual qualities, offer informal play space for children and act to unify the park. Improvements might include integration of natural elements (boulders and vegetation) within the grass-lined channel. Additional tree plantings on the south and east boundaries would provide a screen from adjacent residences.

Neil Snipes Park

Location: Corner of 5th Street and Hamner Avenue.
Type: Neighborhood park.
Size: 15.0 acres.
Condition: Fair (7).

Description: The developed portion of the site includes play equipment and limited picnicking and informal play space. Due to lack of public interest and other reasons, the BMX (bicycle motor-cross) track is closed to the public. Although the new design is not complete, there is some speculation that Snipes Park may become a community park featuring meandering paths for pedestrian use, a par course, a central play area for children, sand volleyball court, and, possibily, an outdoor amphitheater. Planting islands along the paths and a simulated "dry" creek add to the visual interest. As a community center park, it would accommodate group and family picnicking.
General Comments: Neil Snipes Park is currently under redesign. There is thereby a good opportunity to implement one element of the greenspace plan. Because of the size and location of Snipes Park the development of a specialty park would well serve the community. Such a park would focus mainly on court-type activities such as racquetball, basketball, tennis and volleyball. Whether or not Snipes Park becomes either a community center or specialty park, proper measure should be taken to lessen the visual and noise impact along Hamner Avenue. Restrooms are in poor condition.

Parmenter Park

Location: Reservoir Avenue.
Type: Specialty.
Size: 4.5 acres.
Condition: Fair (9).

Description: Parmenter Park is used primarily for adult baseball. Other site amenities include children's play equipment, picnic shelters and barbecue facilities.
General Comments: Future park improvements should deemphasize the use of chain-link fencing. Access into the park should be more inviting for pedestrians, reducing automobile use. Within the park, circulation should accommodate pedestrians as they move from one area to another.

River Trails Park

Location: Off Hamner Avenue, along the Santa Ana River.
Type: Regional.
Size: 277.0 acres.
Condition: Poor (4).

Description: Approximately 273 of the 277 acres of River Trails Park remain undeveloped; an equestrian trail system meanders through the riparian environment. The developed four acres are leased to a private concessionaire who operates and maintains a public horse-riding stable. The primary use of River Trails Park is limited to horseback riding; however, walking and hiking are allowed if a permit is obtained through the Parks and Recreation Department.
General Comments : The Santa Ana River is the main feature of River Trails Park and should be considered the focal element of any future park improvements. As an entry statement into Norco, the river should support the city's desire to enhance and maintain its rural character. The river should be treated as an integral part of the city rather than a barrier. The redesign and upgrade of this park may help to achieve a pleasant "park" atmosphere. A multi-user trail crossing the Santa Ana River would provide easier access.

River Trails Park is a major gateway into Norco and will play a greater role as National Trail 100 becomes a reality. Norco and River Trails Park may then become a major equestrian trail hub for the southern California region. The city will have the opportunity to invite visitors to experience the uniqueness of Norco for equestrian uses.

Ted Brooks Park

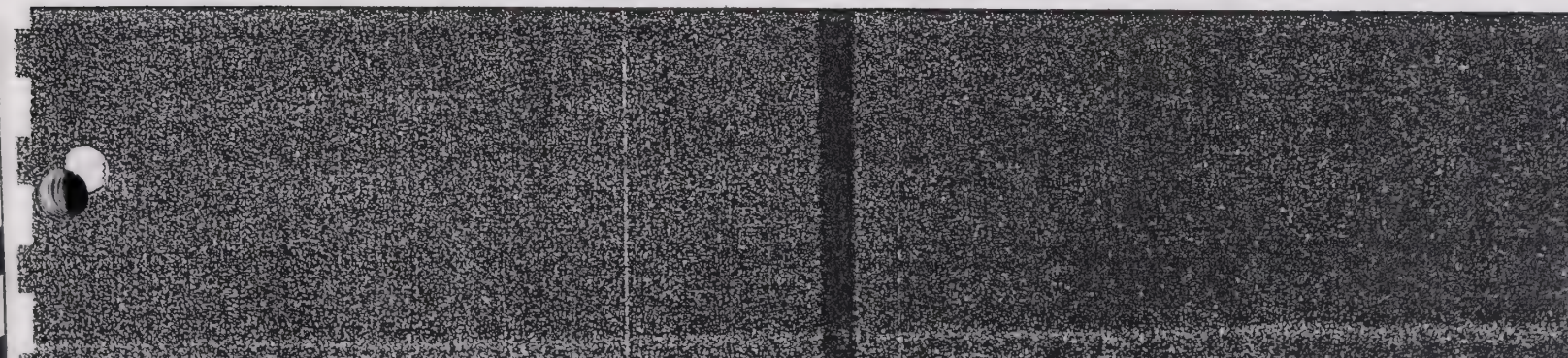
Location: Vine Avenue.
Type: Specialty.
Size: 1.4 acres.
Condition: Fair (8).

Description: Ted Brooks Park provides a warm-up arena that ties directly into an equestrian trail. Limited informal free play space is also available.
General Comments: Ted Brooks Park caters mainly to the equestrian community; however, the design (size and surface material) of the warm-up arena tends to limit its usefulness. Accommodating the need for warm-up arenas in the community, a redesign of this facility should address the proper size. Because of the size of warm-up arenas and possibility of locating new warm-up arenas throughout the community, Ted Brooks Park may serve the community better as a neighborhood park.

Wayne Makin Park

Location: Corner of Corydon and 5th Street.
Type: Specialty.
Size: 21.5 acres.
Condition: Fair (7).

Description: Wayne Makin is the primary sports park accommodating high-intensive activities for Norco and some of Corona. The park is used for little league, girls' softball, football, soccer and other youth sports. Facilities include two little league fields, a senior league field, three football fields, five soccer fields and one mini-minor field.
General Comments: Viewing the Wayne Makin Sports Park from a distance, one observes that the telephone pole/light standards stand in sharp contrast to the surrounding area. Redesign of the lighting system, including decreasing the number of poles, will help provide more visual order. The chain link fencing is an overwhelming presence at this sports park; not only does the amount of fencing detract from the visual quality of the sports park, but it also contributes to confusion users circulate from one field to another. Providing play equipment for children is a good idea; however, such equipment should be located and clustered in an area away from the danger of flying baseballs. Additional planting should be considered at the east side of the sports park, softening the view towards CRC yet allowing adequate visual survey for area security. Facilities requiring special attention include the dugouts, backstops field and spectator bleachers.



Planned Parks

Two parks are planned for the City of Norco. One site is seven acres of Ingalls Park's 44 acres. Sixth Street separates the site from the existing facility. According to Ray Odell, Director of Parks and Recreation, this site is being considered as a community center park; however, the Greenspace Plan suggests that this area may better serve the community as a specialty park that would focus on connecting the two parks, with the possibility of linking the two parks through an urban plaza.

The second of the two planned parks would be located on the west side of Norco, near Kips Korner Park. This 1.7-acre park dedication site, lots 50 and 51 of tract 22497, straddles a drainageway and will function as a neighborhood park/retention basin.

Schools

Six schools, embracing approximately 70.2 acres, make up the public school system. These are Norco High, Norco Junior High, Norco Elementary, River View, Sierra Vista Elementary, and Highland Elementary. The recreational opportunities for public outdoor facility use includes baseball, softball, tennis racquetball and basketball. Norco High School offers indoor facilities for basketball and volleyball. Although most school facilities are supposed to be accessible to the public for recreation, locked gates and fences discourage their use.

606 STUDIO

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

COURTS & FIELD SPORTS Service Area

Greenspace for Norco

PARK & RECREATION DEPARTMENT

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

Park Inventory Conclusions

The attraction capability of a facility is dramatically affected by the quality or uniqueness of design and development." (*Recreation, Park and Open Space Standards and Guidelines,* 1983)

The current park system could be utilized more effectively were additional time and funding devoted to appropriate park planning, design and maintenance. Existing park facilities and amenities do not at present adequately support park functions or elevate aesthetic qualities. Creating comfortable and beautiful park environments would encourage use and also elevate the community appreciation of its parks.

Specialty parks, including Ingalls, Clark's Field, Wayne Makin and Parmenter, servce a single-purpose recreational activity such as field sports and equestrian activities. These activities provide the majority of Norco's recreation. Areas of low-intensity or passive recreational use are limited and cannot accommodate the demand. This stituation suggests the need for a more balanced park system.

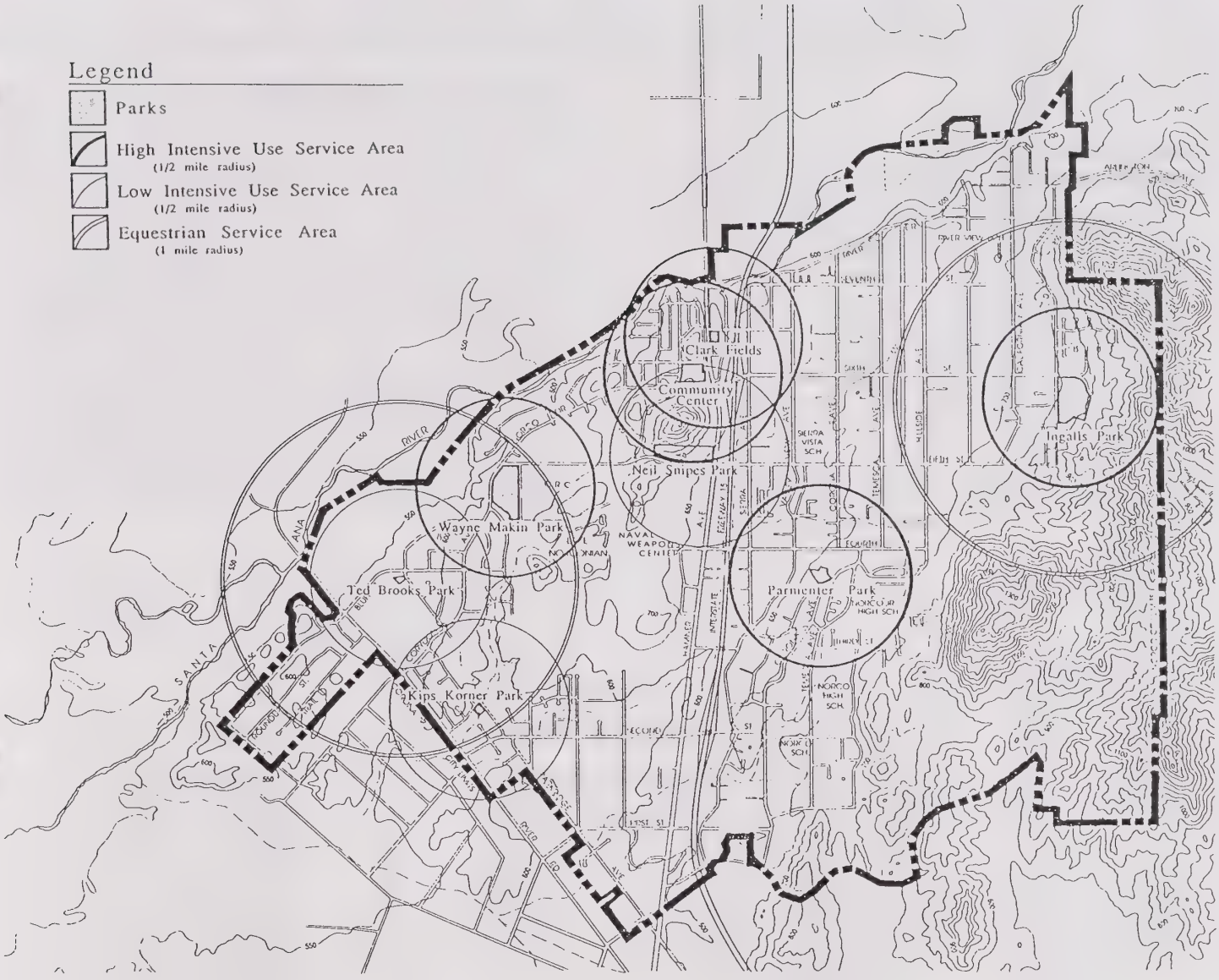
The existing trail system provides great opportunities for linking parks to the community at large and to regional park resources. However, the trail system discourages uses other than equestrian, including bicycling, strolling and jogging. Currently, the trail system is secondary to the automobile in terms of location and landscape treatment. This is surprising in an equestrian-oriented community.

Providing access to the various facilities is another important component to maximizing the use of a park. The same can be said for school facilities, especially outdoor facilities; fences and locked gates there and at Ingalls and Parmenter Parks do not invite their use.

Chain link fencing at Wayne Makin, Parmenter and Community Center is now a characteristic solution when defining park boundaries and the separating facilities within parks. Not only contribute to visual blight, but create circulation and access problems for persons entering and moving about the park.

Existing and future parks can better support the recreational demands of the community if special attention is given to their visual quality (landscaping, site amenities), circulation (equestrian, pedestrian and bicycle access within and near parks) and site planning (focusing on the compatibility between various activities).

The amount of labor needed to develop and maintain parks is an ever-present problem. Volunteers can be a valuable resource, assisting in development, maintenance and operation of park facilities and programs. If volunteer efforts are focused on park construction or maintenance, special attention must be given to quality control, to maintaining the aesthetic and function of park amenities.



606 STUDIO

HIGH/LOW INTENSITY USE & EQUESTRIAN

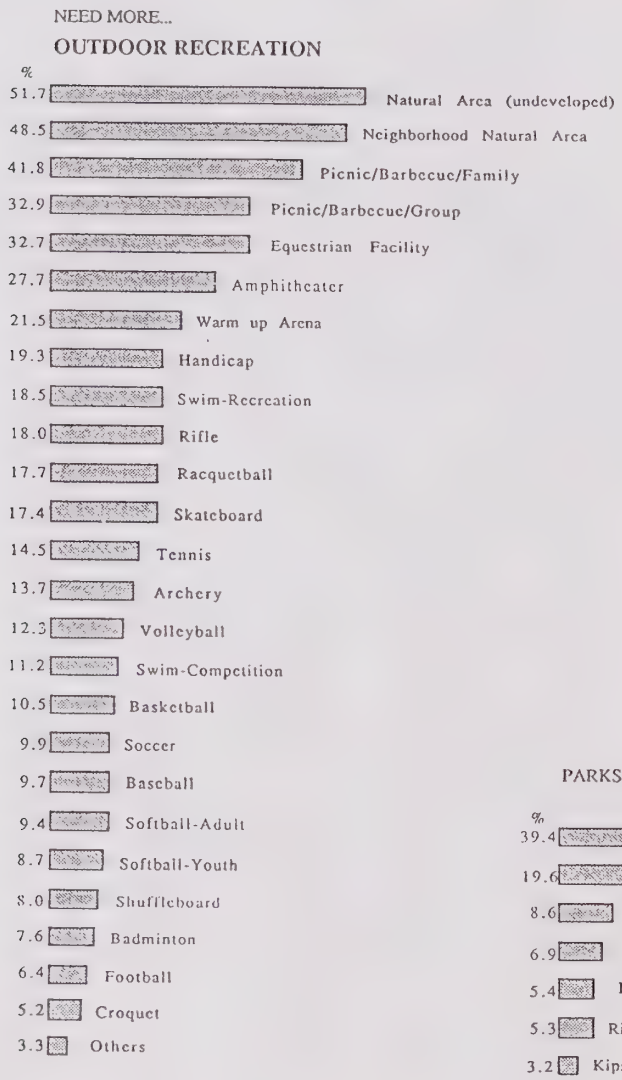
Greenspace for Norco

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

PARKS & RECREATION DEPARTMENT

0 1000' 2000' 4000' 6000' NORTH



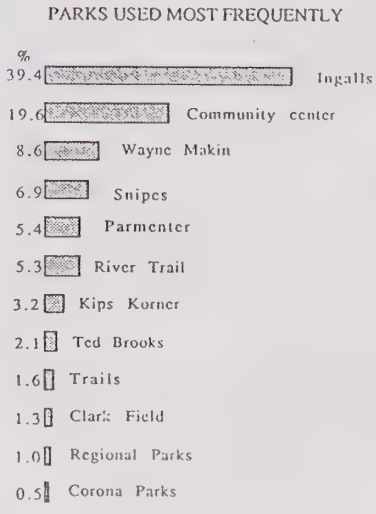
The Community Profile

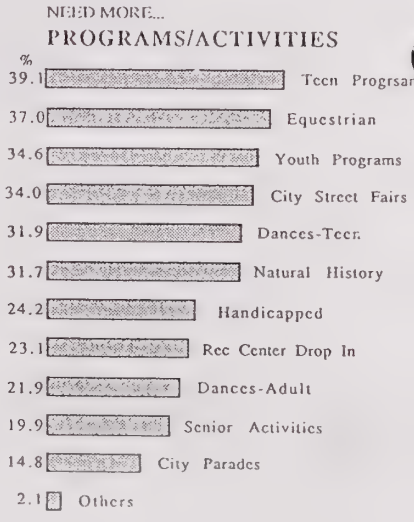
User Needs Surveys

In determining the city of Norco's current and future needs for parks and recreation, the 606 Studio, in conjunction with the Norco Parks and Recreation Department, conducted a user needs survey, in order to gain a better understanding of these community needs.

Approximately 6000 surveys were mailed-out, 627 were returned, with a tabulated total response rate of 10.4%. The surveys were color coded to enable the design team to recognize any significant recreational differences within the community. (See Page 45) For the tabulated totals of the user needs survey, see appendix D.

Enhancing the city's rural image is a major concern for the community. Also a major concern was preserving nature, this was reflected in the high response rate in regards to natural undeveloped areas (51.7%) and neighborhood natural areas (48.5%).





Section VI

About 41.8% of the respondents felt the need for more family picnicking areas and 32.9% desired more group picnicking areas. The respondents also expressed a high interest in equestrian related activities, (32.7%) and the need for an outdoor amphitheater (27.7%).

The trail system is regarded a major asset of the community. However, the current trail system accommodates and encourages primarily equestrian circulation and discourages other modes of circulation, such as pedestrians and bicyclist. Of those responding to the survey, 42.4% desired bicycle trails and 39.2% felt the need for more equestrian and walking/hiking trails. This suggests the need to enhance the existing equestrian trail while integrating bicycle and pedestrian oriented trails into the current system.

The survey indicates that existing indoor spaces for recreation programs and activities are insufficient due to an increased interest in arts and crafts, fitness rooms, racquetball, weight training and aerobics.

As shown in the survey results, the most frequently used park is Ingalls, followed by the Community Center, Wayne Makin and River Trails. However, it should be noted that Ingalls park is used primarily on the weekends whereas the other parks provide daily recreational space.

A high proportion of the respondents (49.2%) have lived in Norco for more than 10 years.

USE OF FACILITY/ACTIVITY

	% Daily/Weekly	% Monthly	% Couple times a year	% Never	% Outside Norco
Picnic/Barbecue	6.7	11.8	37.2	14.7	14.2
Softball	8.8	2.1	12.8	36.2	6.2
Baseball	9.3	1.9	7.7	38.4	1.9
Football	3.0	0.8	5.6	42.3	1.6
Soccer	4.5	1.3	3.5	40.8	2.7
Tennis	3.8	2.6	9.6	36.0	2.2
Volleyball	2.2	0.8	9.4	38.4	3.2
Basketball	10.4	4.3	8.9	33.3	2.9
Swimming	13.4	4.3	16.4	23.4	5.7
Youth Classes	8.3	1.3	5.6	29.5	1.0
Adult Classes	3.8	2.6	7.3	26.8	2.9
Animal Husbandry	12.0	4.1	8.8	30.6	2.6
Jogging/Hiking	17.1	4.1	8.5	25.8	4.6
Craft	8.6	3.5	5.9	31.1	4.5
Fitness	14.0	3.2	3.8	25.4	2.8

Of those responding to the survey, 8.4% said they were light users, using the park facilities once a year, 12.4% defined themselves as moderate users, using the parks monthly, and 35% identified themselves as heavy users, using the parks several times a year. Approximately 13% never use the parks.

The most commonly reported reasons that people do not use the Norco parks or only use them lightly are that programs and facilities are not available.

With regard to park maintenance, 50% of the respondents felt that the parks are adequately maintained, whereas only 42% felt equestrian facilities are adequately maintained. Twenty three percent of the respondents do not know if the parks are adequately maintained, while 38% do not know if equestrian facilities are adequately maintained. This suggests either a lack of park interest or lack of desired programs and facilities.

Focused Interviews

In an effort to gain a better understanding of the public's philosophy toward recreation and the city, the 606 Studio conducted focused interviews. Fifty-one focused interviews were administered, providing insight into public's attitudes toward recreation and the city at large. Results below list the single significant answer most common by given; otherwise, the three highest responses are given.

The element enjoyed most:
- rural atmosphere

The elements disliked most:
- growing commercial development
- traffic
- unkempt appearance

Norco appeals to:
- horse lovers
- animal lovers
- family people

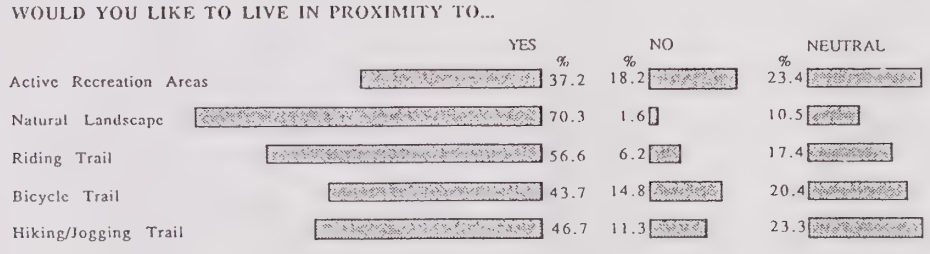
Why people move to Norco:
- rural atmosphere
- cost of real estate
- equestrian emphasis

The favorite places in Norco:
- a specific park
- river
- residence

The most important features or landmarks in Norco:
- Norco hills
- Santa Ana River
- Ingalls Park

The image of the Norco hills:
- open space
- beauty
- recreation

The image of the Santa Ana River:
- recreation
- open space
- beauty or pollution



Survey Zone 1

NEED MORE...

%	
41.6	Natural Area (undeveloped)
50.6	Neighborhood Natural Area
41.6	Picnic/Barbecue/Family
33.7	Picnic/Barbecue/Group
27.0	Equestrian Facility
27.0	Amphitheater
46.1	Bicycle Trail
38.2	Equestrian Trail
39.3	Walking/Hiking Trail
25.8	Indoor Racquetball
21.3	Fitness Room
20.2	Warm-up Arena
19.1	Swim-Recreation
19.1	Outdoor Racquetball
19.1	Rifle

PARKS USED MOST... FREQUENTLY

%	
31.5	Ingalls
12.3	Wayne Makin
10.1	River Trails
9.0	Community Center
5.6	Ted Brooks

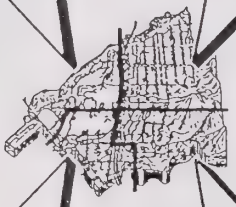
Survey Zone 3

NEED MORE...

%	
54.5	Natural Area (undeveloped)
49.5	Neighborhood Natural Area
45.2	Picnic/Barbecue/Family
34.7	Picnic/Barbecue/Group
34.0	Equestrian Facility
29.7	Amphitheater
40.9	Bicycle Trail
40.0	Equestrian Trail
44.0	Walking/Hiking Trail
30.0	Jogging Trail
23.8	Arts/Crafts
22.6	Fitness Room
21.4	Indoor Racquetball
20.1	Handicap
19.5	Aerobics

PARKS USED MOST... FREQUENTLY

%	
44.2	Ingalls
21.0	Community Center
9.2	Snipes
6.8	Wayne Makin
4.6	Parmenter



Survey Zone 2

NEED MORE...

%	
54.4	Natural Area (undeveloped)
49.5	Neighborhood Natural Area
38.6	Picnic/Barbecue/Family
32.7	Picnic/Barbecue/Group
33.7	Equestrian Facility
21.8	Amphitheater
45.5	Bicycle Trail
35.6	Equestrian Trail
37.6	Walking/Hiking Trail
25.7	Jogging Trail
25.7	Indoor Racquetball
24.7	Arts/Crafts
22.8	Handicap Access
21.8	Rifle
20.8	Swim-Recreation
20.8	Warm-up Arena

PARKS USED MOST... FREQUENTLY

%	
29.7	Ingalls
24.7	Community Center
17.8	Kips Korner
8.9	Wayne Makin
7.9	River Trail

Survey Zone 4

NEED MORE...

%	
49.1	Natural Area (undeveloped)
43.0	Neighborhood Natural Area
35.1	Picnic/Barbecue/Family
29.2	Picnic/Barbecue/Group
32.4	Equestrian Facility
25.4	Amphitheater
41.2	Bicycle Trail
41.2	Equestrian Trail
27.2	Walking/Hiking Trail
29.8	Jogging Trail
27.2	Handicap Access
23.7	Fitness Room
20.2	Arts/Crafts
20.2	Warm-up Arena
19.3	Swim-Recreation

PARKS USED MOST... FREQUENTLY

%	
40.3	Ingalls
19.3	Community Center
15.9	Parmenter
10.5	Wayne Makin
3.5	Snipes

When people want to be outdoors, they usually go to:

- Norco trails
- other locations
- backyard

Twenty years from now, the "ideal" Norco would look like:

- it does right now

Twenty years from now, people are afraid Norco will look like:

- more commercial development
- more residential development
- mass development

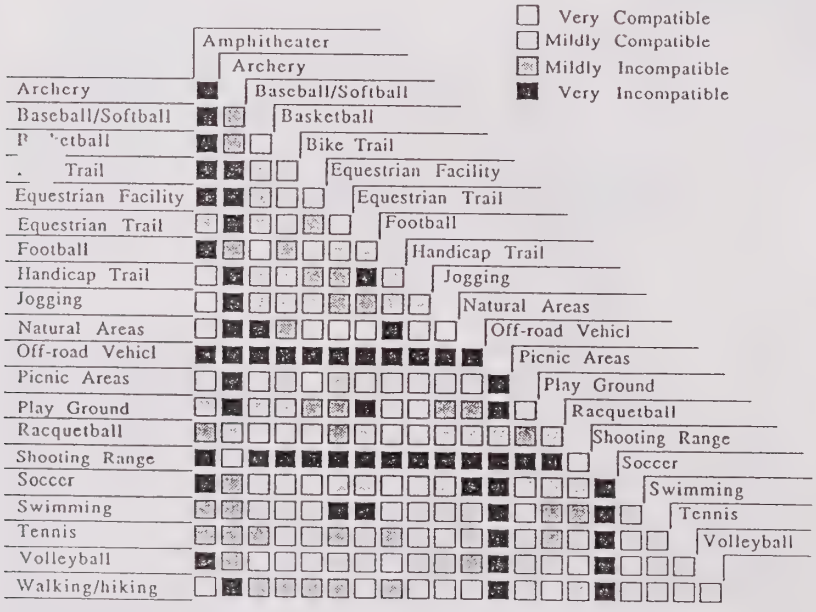
Outdoor features missing in Norco:

- various park types
- further trail connections
- more parks and community identity

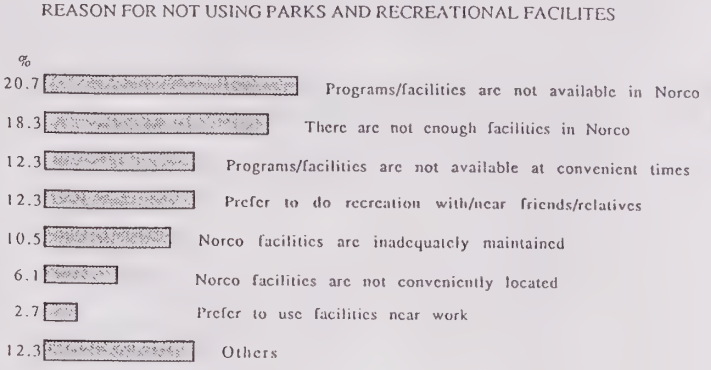
Open space within the city people would like to save:

- Norco hills

The majority of people are interested in starting community composting program, and they also enjoy wildlife near their homes. About half included "nuisance" species (coyotes and deer) in their definition of wildlife.



RECREATION ACTIVITIES COMPATIBILITY MATRIX

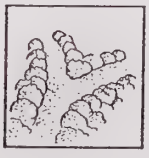


Community Workshops and Personal Contacts

Members of the community rasied concerns in the community workshops, written statements, and casual conversations with 606 Studio members as we pursued our information gathering. Concerns were in the general categories:

- Natural area trail connections
- Wildlife habitat
- Neighborhood parks for families with children
- Facilities for teenagers and young adults
- Better distribution of equestrian facilities
- Pedestrian surfacing
- Norco's community image as represented to its citizens and visitors The following represents a consolidation and interpretation of some of the citizen input.

Trails and Connections



The people of Norco are on the move. Whether on horseback, bicycle or foot, they actively experience their environment and appreciate the natural features of their surroundings. The physical setting is part of the reason they have come to live there. But they want and need to be able to reach their landscape's features. The landscape can be made more accessible by provision of:

- Trails
- Access points
- Rights-of-way through private lands
- Bridges and underpasses where the river or auto traffic presents obstructions
- A map of the city's trail system

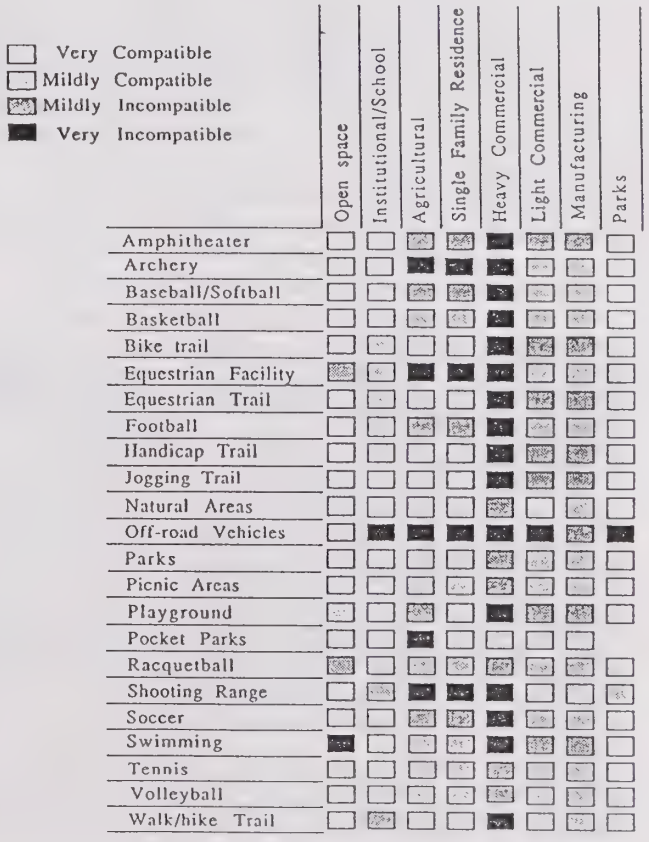
Equestrians are quick to point out the difference between horseback riding and other modes of transportation. With other modes, humans are in complete control (to the best of one's ability) of the movement. For equestrians, control is shared with the horse. Sensitive to disturbances in their surroundings, horses may react to a honking horn or the gunning of an engine by rearing up or stumbling over trail fencing. These may precipitate an unintentional dismounting which may seriously injure the rider. If simply for their disturbances to horses, aside from their damage to the land, ORVs ought to be banned from given areas, in the view of some equestrians. Consideration of equine sensitivities must be included in the design of equestrian trails and crossings.

Wildlife Habitat

Many residents of Norco have commented on the delight they experience as the cottontails hop up in front of them like popping popcorn along the trails in the hills. Exposure to singing birds and scurrying lizards soothes the soul. Some have expressed deep concern for the fate of their feathered, furred, and scaled wildland neighbors. One citizen related that he really misses the burrowing owls that used to be abundant in the Norco area and wishes they could somehow be brought back. It appears that much of the affection and appreciation that Norconians feel for their domestic animals is extended to the natural animals of the world and their local area, in particular. Wildlife habitat is an essential component of the natural landscape character that has brought many residents to the City of Norco.

Children's Recreational Needs

With the proportion of young residents of the city – age four years or less – at about 8% (and rising), the need for additional facilities to accommodate them is clear. If a comparison is made between the existing city facilities and programs pertinent to this age group, and those provided for seniors, who constitute about 5% (and rising) of the population, the seniors appear to be much better provided for. (Neither of these groups is well served by the public school system.) When the number of five- to eleven-year-olds is added to the number of tots, the proportion of children swells to 18% of Norco's population.



RECREATION - LAND USE COMPATIBILITY MATRIX

Parents of very young children have expressed the need or parks close to home where they can take their children without needing to drive. In addition to providing play settings for the children, these parks can also serve an important social function as meeting places for parents who, otherwise, may suffer a lack of adult companionship. Parents of children old enough to be out on their own prefer that their children not have to travel great distances from home for socialization, exercise and adventure. Small neighborhood parks can strengthen ties among Norconians and answer needs for family recreation.

Teenagers' Recreational Needs

Another 18% of Norco's population is comprised of persons between the ages of 12 and 21. Some Norco parents have expressed concerns about the potential for drug and alcohol abuse among their teenagers. Although evidence of the problem in Norco seems less conspicuous than in neighboring Corona, they fear the challenge is confronting their community, just as in communities across the nation. Certainly, the more opportunities for healthful diversions a community can make available to its young people, the less likely they are to put their time into unhealthful activities. With their fluctuating hormone levels, teenagers need opportunities for emotional as well as physical release. The element of "perceived danger"("thrills") can accommodate some of this release when it is provided for in their environment. With proper design, some recreational settings can safely deliver to teenagers "thrills" which allow for emotional release.

Caught empathetically in the social limbo between childhood and adulthood, teens also need their own gathering places. This need has been manifested in Norco by congregations of young people in the parking lots of convenience stores. With the city's recent passage of an anti-loitering law, who can guess what locations will take the place of these private parking lots? The

gatherings may have seemed a nuisance to store owners and customers, but at least these parking lots are well lit and allow easy surveillance by law enforcement. Teenagers of Norco need a space dedicated to them, in which they can socialize with their peers or just "hang out."

Equestrians' Recreational Needs

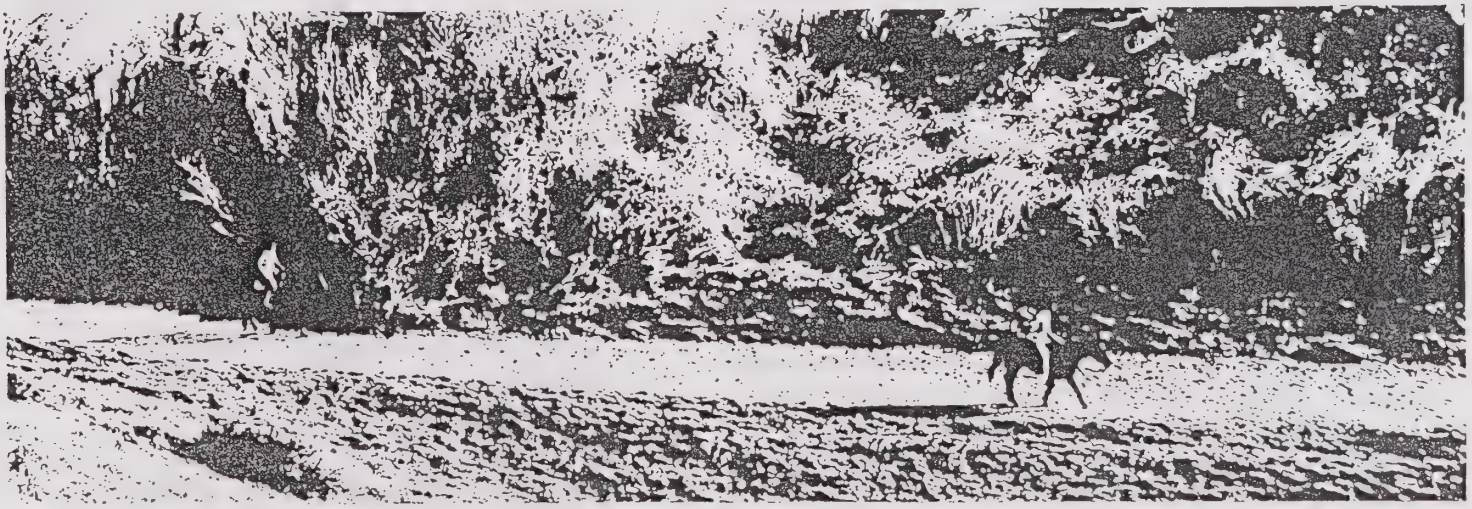
Equestrians say they would also benefit from a social space designed with their needs in mind. This is one of the functions a warm-up arena can serve. The warm-up arena at Ingalls Park is seldom open for casual drop-ins; the appropriate structure and location are offered here, but the function is underfulfilled. On the west side of town, some citizens have suggested, among other problems, that the arena provided at Ted Brooks Park is not near enough to the natural areas that equestrians would prefer to ride in. In this case, the structure and functions are flawed and the location apparently inadequate. A better

location, they say, would be adjacent a trail head where trails from a number of directions might cross. This requirement is fulfilled in the arena at Ingalls Park. If left open more often, it would serve many of the needs of those on the east side of town. (The west side needs more work.) To be successful, community equestrian facilities must satisfy the requirements of proper structure (construction), function (socializing space and exercise for horses) and location (near crossroads of popular trails).

A growing trend in equine recreation in Norco is the use of carts and carriages. Possibly due to the dearth of trails wide enough to accommodate them, they have not established a strong visual presence in the community. (The 606 Studio team was unaware of the issue until carriage enthusiasts raised it at the final community workshop.) Some private landholders have permitted carriage drivers to ride on their lands under certain conditions, but there is no officially sanctioned area for them to ride. The width of trail required for these vehicles precludes their installation in many areas. But an effort must be made to work with the group of carriage drivers toward providing recreational facilities that serve their special needs.

Pedestrian Surfacing

Although most Norconians enjoy the atmosphere effected by the absence of standard suburban concrete sidewalks, many parents, in particular, have complained that they are concerned that their children must go into the street to ride their wheeled toys. The same problem confronts mothers with strollers and persons in wheelchairs. During the rainy season, the equestrian trails can become so wet and muddy that even the horses are out in the street. The aftermath of winter leaves potholes in the trail that can be difficult for the most able-bodied person to maneuver, not to mention people with physical limitations, and some of the elderly. Pedestrian surfacing must be provided wherever possible as an alternative to the equestrian trails, but that surfacing must be aesthetically compatible with the unique character the city is striving to maintain.

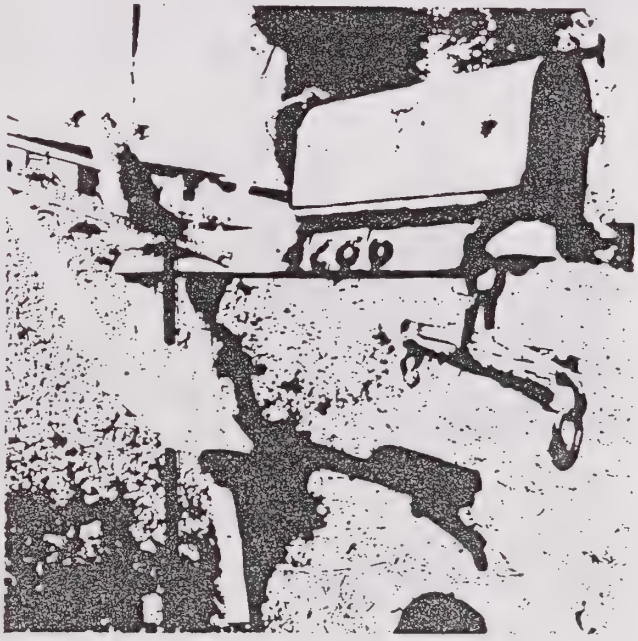


Norco's Community Image

Many citizens have complained about the image Norco presents to its residents and the world at large. Occasionally these complaints refer to the unkempt appearances of some residents' yards. But that issue can lead down the path toward codes, covenants and restrictions, opposition to which has been one of the hallmarks of the community "personality." What citizens have agreed most heartily upon is the need to improve the public image of the city, notably in its primary commercial districts on Hamner Avenue and Sixth Street and at entrance points into the city. Residents have recollected how much nicer Hamner Avenue was "before they took down all the trees."

Remarks of disapproval about the removal of mature trees in other parts of the city were frequently made to the 606 Studio members. It was pointed out that a painting hung in the City Council chambers depicts a windrow of huge eucalyptus that recently fell to the path of development. The passing of these historic landmarks was recalled with heartfelt sadness. Such losses are avoidable; For rather than the catastrophic changes that usually accompany development, a transitional or successional approach can integrate new cultural development harmoniously. The greenspace network can be the key to achieving this harmony.

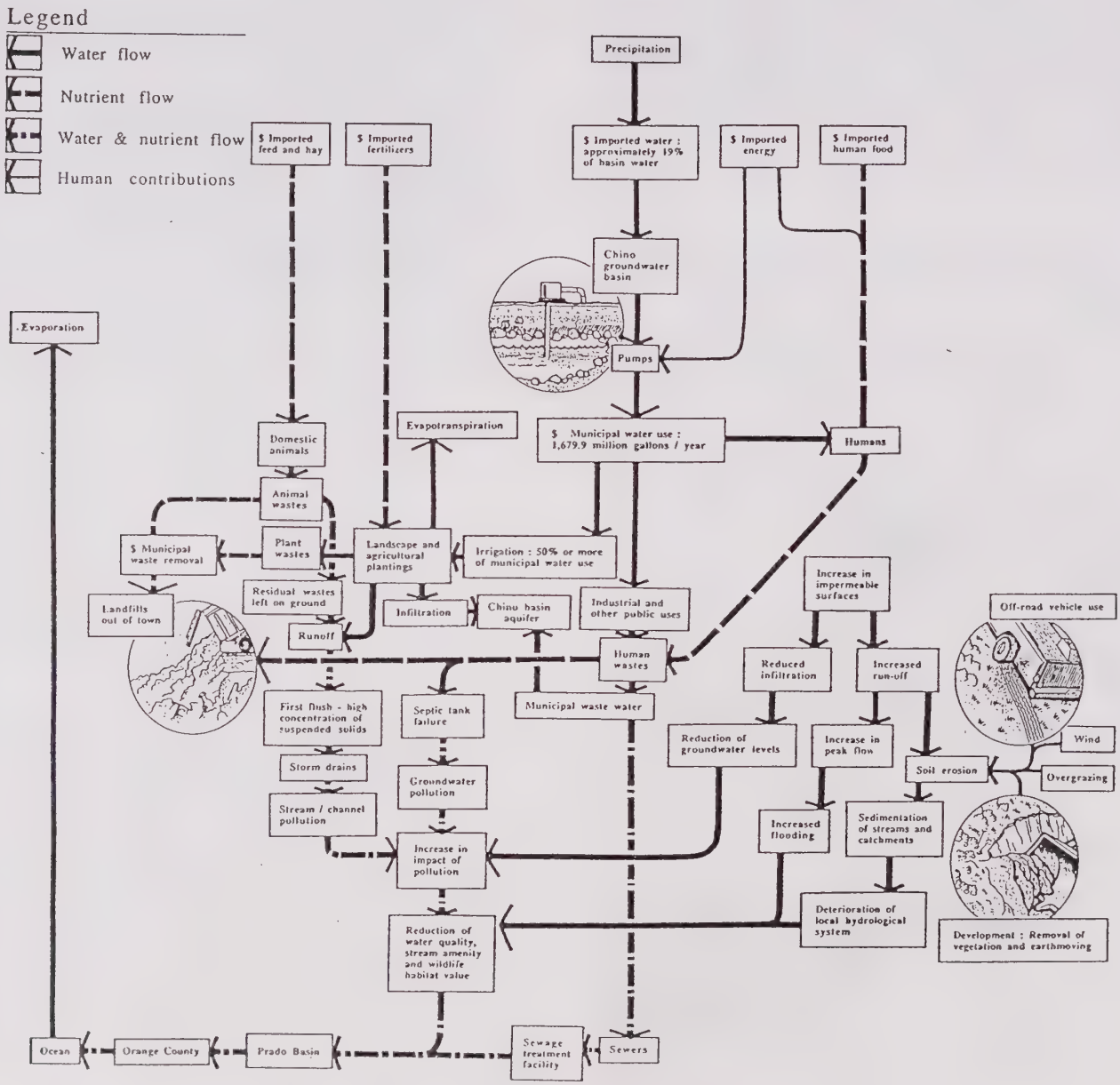
Among suggestions Norco residents have offered for improving the character of Hamner Avenue are trees and associated landscaping, distinctive lighting treatments, benches and the upgrade of facades of many of the commercial buildings. For Sixth Street, some have suggested the incorporation of a rest stop park where riders might hitch their mounts to enjoy a social sarsaparilla in the shade. One astute citizen observed that because Sixth Street serves as an entryway to Ingalls Park, elements that echo the landscape surrounding Ingalls Park ought to be incorporated into the Sixth Street landscape. The inclusion of carefully placed boulders, native plants and other complementary street amenities would create a grand entry statement to the equestrian facility, reenforcing the image of a unique community. Inasmuch as Norco's dramatic physical surroundings offer great potential as community image-makers, much more can be done to take advantage of these features. Norconians are asking for a face-lift for their city that will reinforce the character of its people and landscape.



Outdoor Recreation Trends in California

In an effort to determine Californians, opinions, attitudes and values regarding outdoor recreational matters, the California Parks and Recreation Department commissioned a statewide study, the findings of which may be helpful in planning future parklands in Norco. Full greater details may be found in *Public Opinions and Attitudes on Outdoor Recreation in California, 1987.* Select major findings of this study may be summarized as follows:

- Approximately two-thirds of respondents consider public park and recreation areas important to their life-styles.
- Highly developed parks and recreation areas are visited most often; however, nature-oriented parks or reserves are the preferred type of outdoor recreation areas.
- In terms of general attitude, Californians strongly agree (76%) that protection of the natural environment is important for outdoor recreation and that of natural areas must be preserved for use by future generations (75%)
- Californians believe that eight outdoor recreation activities should have top priority for the expenditure of public funds: walking, bicycling, camping in developed sites with tent or vehicle, birdwatching/general nature study/visiting natural areas, picnicking in developed sites, beach activities, outdoor cultural events and visiting museums/zoos/historic sites.
- California tends to support funding for park and recreation areas through "sin" taxes and increased fees for special facilities while opposing increases in general forms of taxation.
- Increased entrance user fees found its strongest support (68%) when the money was used only at the park where it was collected.
- Approximately three-fourths of respondents believed spending should be increased for the protection and management of natural and cultural resources. Increasing the protection of scenery and the natural environment was strongly supported by three-fourths of the respondents.
- Californians tend to support the concept of using unpaid private citizens as park volunteers (85%). Of those individuals who had not volunteered, almost 64% indicated they would consider volunteering.



WATER AND NUTRIENT FLOWS

Ecological Analysis

Section VII

Results of the ecological analyses are presented in this section as a series of models. A model in this context is an abstract representation of reality, including only the elements essential for understanding interrelationships. Two types of models are shown here: a flow model for decisions related to water and nutrients and suitability models for locational decisions. These models form the analytical foundations for the greenspace plans and designs presented in later sections.

Greenspace plays a key role in urban ecological processes. Greenspaces filter water and air, recycle waste, support natural vegetation and wildlife and not least of all, offer psychological support for humankind. Thus they form a basic ecological support system. Without these open spaces, urbanization obstructs natural processes that support life.

The planning and management of greenspace offer many opportunities to fit human needs to natural systems. In order to understand how this fit may be accomplished, the existing situation must be analyzed.

Water and Nutrient Flows

The Water and Nutrients Model diagram represents of some of the material and energy flows of the urbanizing environment. The flows illustrated are particularly relevant to greenspace planning and management. Strategic greenspace planning can make major contributions to stabilizing ecological functions. For example, reductions in the erosion and sedimentation of Norco's drainageways by conserving slope-holding native vegetation in critical watershed areas can be accomplished. Proper design can reduce the erosion potential on recreational trails. Well-designed biological water treatment ponds can help remove non-point source pollution from storm water while also providing attractive landscape features and making treated water available for other uses and making treated water available for other uses. Greenspace can also provide a medium for recycling the nutrients in animal manure by composting this material and spreading it over the surface of the land.

Greenspace management, including nutrient and water recycling, can produce dramatic monetary savings. While it is often difficult to estimate the exact costs involved in the flows of water and nutrients, each step in the transfer of material or energy carries an associated cost. It makes economic sense to get the maximum return possible for each expenditure of energy (money).

When referring to the model, take notice of what is being imported into and exported out of the city. The energy and resultant costs involved in the transportation of commodities and wastes alone is an enormous component of the system. For the sake of simplicity, these are not depicted in the model.

In recent years, nonpoint-source pollutionhas become a major concern of the U.S. Environmental Protection Agency.

> Nonpoint-source pollution – contaminants that enter our nation's waterways when water washes across the surface of the land – is a nationwide problem. It is responsible for an estimated 99 percent of sediment, 88 percent of nitrates, and 84 percent of phosphates entering Americas lakes and streams. [and aquifers] Decomposition of organic wastes put into the water by human activities uses up oxygen vital to life. Non-point sources are responsible for 73 percent of this biological oxygen demand (BOD) in our waterways.

> The cost of this dirty water is significant. A 1984 study by The Conservation Foundation estimated the yearly costs imposed by sedimentation and associated contaminants resulting from erosion alone as being anywhere from $3.2 to $13 billion. And these estimates do not include many very significant impacts on biological systems for which an economic value is difficult to assign. Nor do they account for the effects of non-point source pollutants – such as nitrates and many pesticides that dissolve in water.
>
> (Hansen et al, 1988)

Aside from monetary costs, but contributing to them, are the costs to the health of all the living beings, including humans, dependent on the water for their survival. In recent years, greater numbers of people, particularly in California, have become concerned about the quality of the water they drink and cook with.

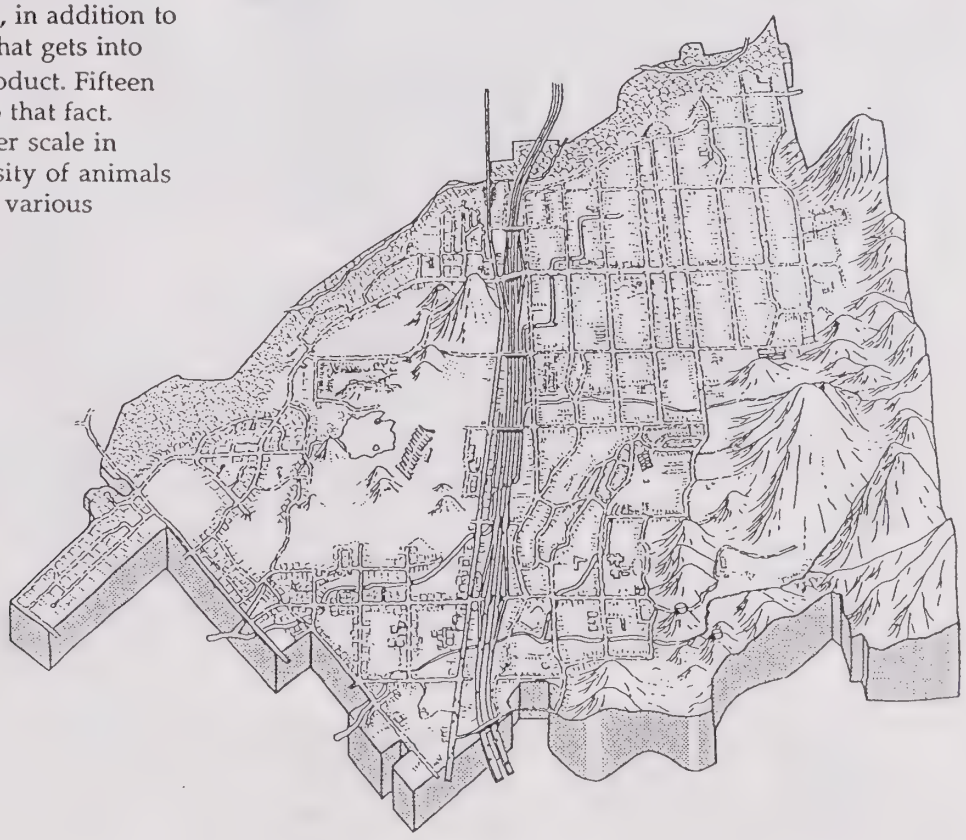
In 1987, the U.S. Congress passed the Water Quality Act, which amended the Federal Clean Water Act. Among other mandated actions, Congress directed the states to develop programs to begin to reduce nonpoint-source pollution. In developing its program, each state had to prepare an assessment report which, to the degree possible, identified and quantified the extent of the problem in that state. Each state also prepared a management plan which outlined steps to be taken in seeking a solution to the problem. California's non-point source pollution assessment and management plan was approved by the federal Environmental Protection Agency (EPA) in January, 1989.

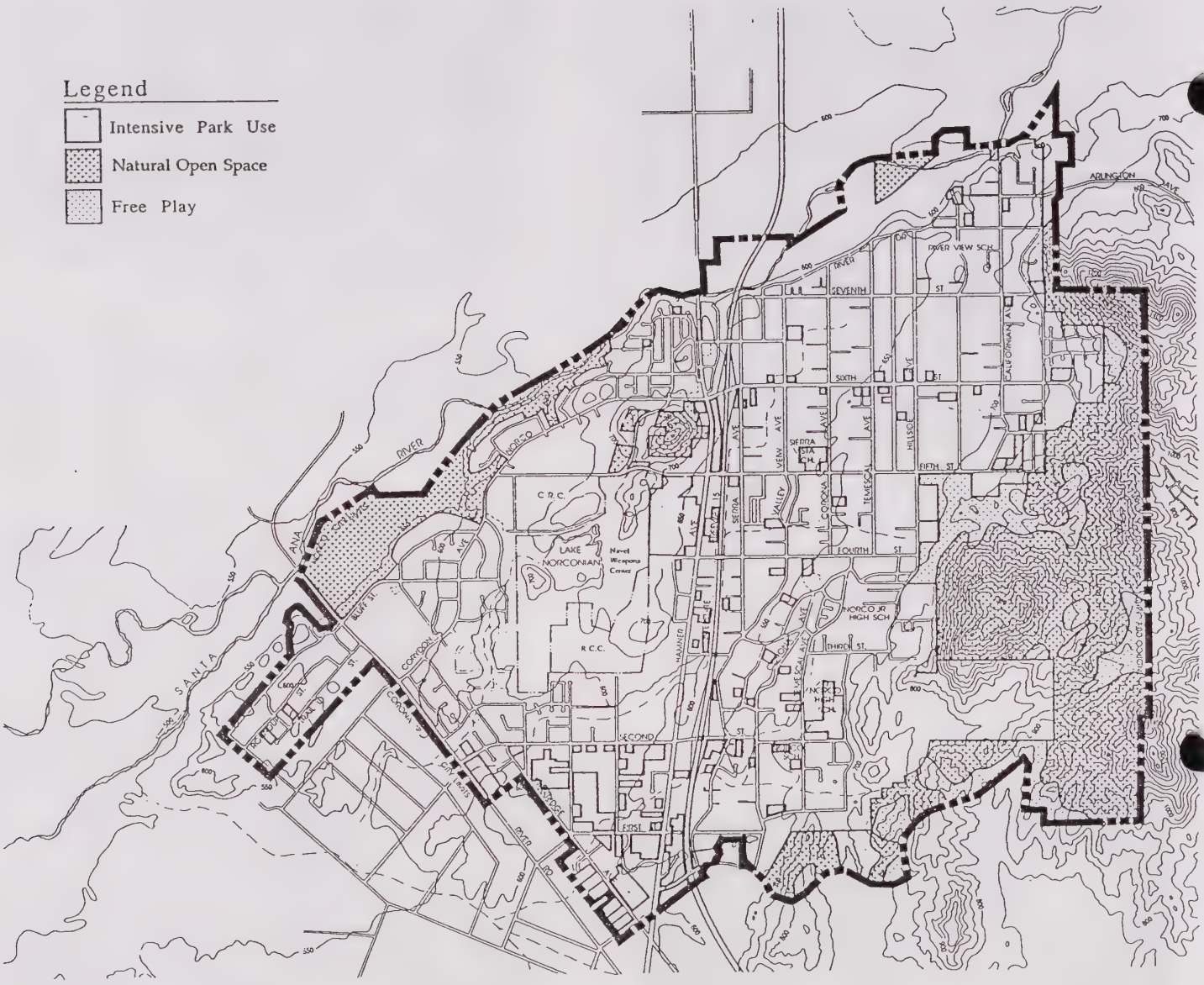
Compliance with California's management plan will be required of all local jurisdictions within the state. The jurisdictions will probably begin to feel this new state regulatory role by early 1990. Cities will be required to monitor the quality of their stormwater discharge and report to their county governments. Roger Turner, Environmental Specialist at the Santa Ana Region office of the California Regional Water Quality Control Board, emhasizes that it is important for communities like Norco to recognize that they may be a part of the problem. The quality of their own environment is at stake.

In Norco's case, along with other cities sharing the Chino Basin groundwater supplies, attention to solving non-point source pollution problems directly affects the water coming out of residents' taps. The Chino Basin aquifer stretches from San Bernardino to the Prado Dam and includes , among others, the cities of Chino and Norco. The basin acts as a vast reservoir, storing snow melt and other run-off from the San Bernardino Mountains and portions of the San Gabriels, along with run-off and waste water from urban and agricultural areas of the basin. An additional 19% of its volume is imported from watersheds to the north and fed by artificial recharge into the basin. Much of the land above the basin continues to be used for ranching, particularly dairy ranching.

With so much livestock living directly above the aquifer in Norco and surrounding areas, the potential for contamination of groundwater is great. Dissolved solids, including high concentrations of nitrates, are leached from manure lying on the ground and proceed through infiltration into the aquifer. In addition to the contamination of human drinking water, increased nitrate concentrations in areas such as the Prado Basin produce diarrhea and increased rates of abortion in many wildlife species. The Regional Water Quality Control Board requires that all large dairy ranch operations in the basin use some type of control to prevent (minimize) such contamination. One of the recommended strategies is the use of water catchment basins to prevent contaminated water from leaving the property. Biological systems can be used to treat water so that it can be recycled for irrigation. Composting of manure facilitates its efficient breakdown, in addition to greatly reducing the amount of manure that gets into our water, and it also offers a saleable product. Fifteen composting facilities in the basin attest to that fact. An analogous situation exists on a smaller scale in Norco which allows an even higher density of animals than is allowed by the county. Although various methods are currently used to dispose of animal wastes, manure often lies on the ground for long periods. During a rainstorm, the "first flush" of run-off is especially laden with contaminants from this and other pollutants lying atop the ground. Norco's first flush is carried, along with that of other communities in the watershed, into the Prado Basin, increasing the impact of non-point source pollution by concentrating it an area which is not only home to abundant wildlife, but also feeds the local groundwater supply. Orange County is the major downstream recipient of this pollution, much of which is recharged to their aquifer.

The Greenspace Plan offers mitigation or solutions for these problems of environmental quality by using open lands as a medium for filtering and treating water.





606 STUDIO

GREENSPACE SUITABILITY MODEL

Greenspace for Norco

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

PARKS & RECREATION DEPARTMENT

Greenspace Suitability Model

Suitability models illustrate "the degrees of ability of land to support a given use or set of uses as they are distributed over a given area in accordance with its distribution of physical attributes" (Lyle, 1985).

The greenspace suitability model represented here takes into consideration a range of locational variables including slope, vegetation, adjacent land uses and open space (public, private and institutional). Maps describing these variables are combined to determine the best future greenspace locations among lands not now built upon.

The greenspace suitability model includes optimal locations throughout the City of Norco that, based on the data, can accommodate recreational uses. The model includes locations for three types or levels of recreational use; natural open space, free play and intensive use. A brief description of these three levels of recreation follows.

Natural Open Space

These areas can best be characterized as having natural or ornamental quality and best suited for low intensity recreational purposes such as nature study, wildlife habitat, camping, limited picnicking and trail uses. Areas with a 20 percent slope or greater.

Free Play Use

These spaces will best accommodate moderate intensity recreation activities. They might include family and group picnicking, and informal play space (not league). Areas with a 10 to 20 percent slope.

Intensive Use

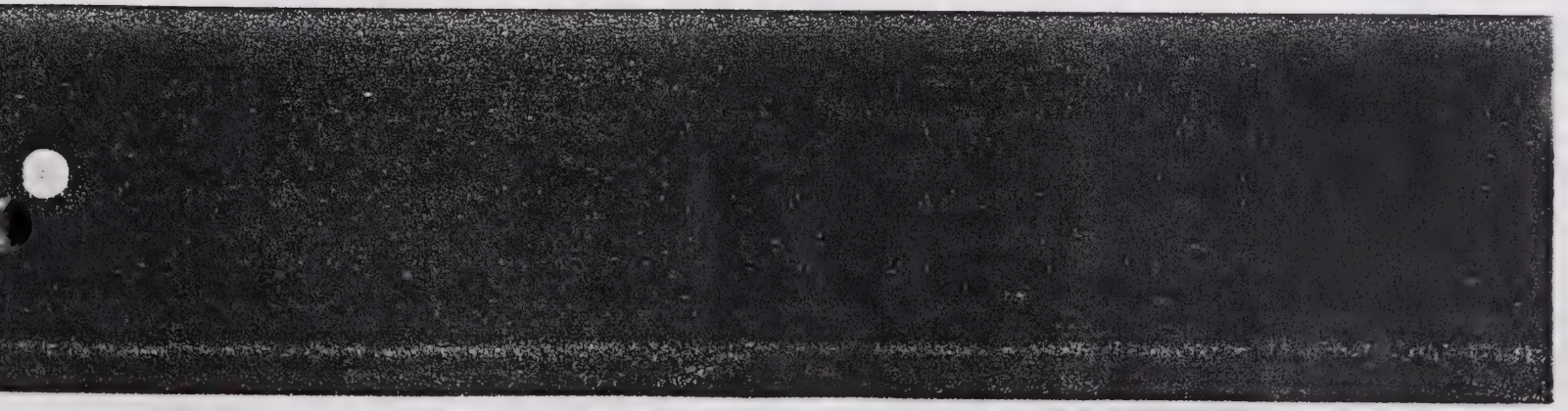
These areas are best suited for high intensity recreational uses such as organized baseball, softball and basketball. The intensive use area can generally accommodate a greater variety of recreation. Areas with a 0 to 10 percent slope.

Hills Suitability Analysis

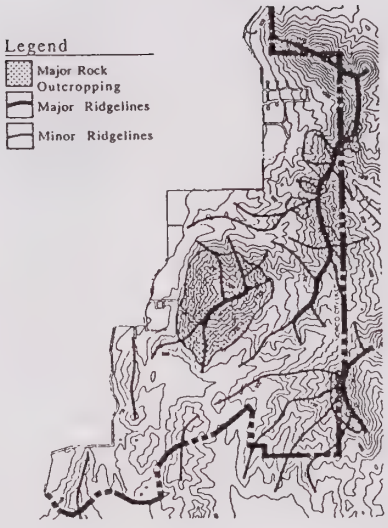
Inasmuch as most of the property in the hills on Norco's eastern boundary is zoned for hillside residential development, determination of potential for greenspace must commence with the determination of land suitability for such development. An orderly process is offered here, based on one developed in a 1988 study for the City of Los Angeles by a 606 Studio team. For a more detailed discussion of the process, refer to that study, *Site Design for Hillside Development.*

A site inventory is conducted which forms the foundation for a suitability model. Site information is represented graphically on inventory maps. Attributes shown on the maps are weighted according to their relevance to the proposed development or conservation. These maps are successively overlaid upon one another and polygons are drawn to reflect the overlap or coincidence of particular conditions in specific areas. The tally of these overlaps results in a suitability model for development and conservation.

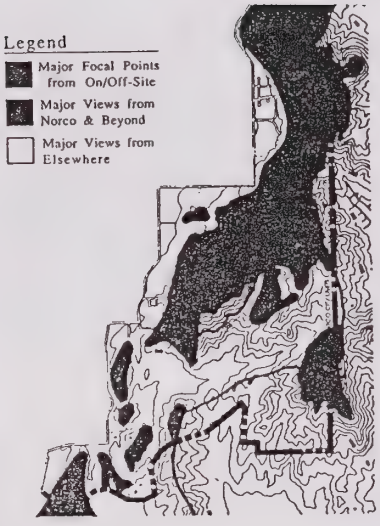
Ranking of attributes identifies site conditions as: exclusionary (with respect to development), primary and secondary. Exclusionary conditions include earthquake faults and endangered species. Power lines may exclude residential development within their rights of way. A linear utility easement runs the length of the hills but an accurate map of its location was unavailable for this analysis. It will restrict development within its narrow band. Other than that, no exclusionary conditions were found in the site inventory. However, any hillside development within Norco should proceed only with trail dedication. Proposed trail easements would essentially exclude development.



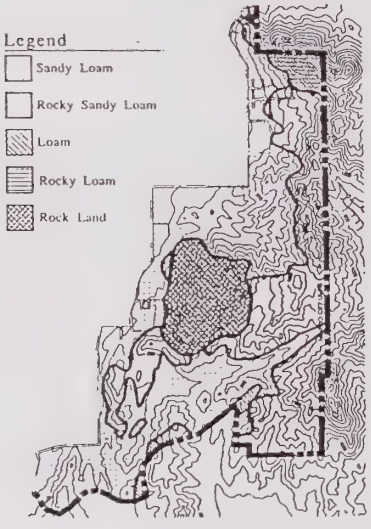
Hydrology Analysis



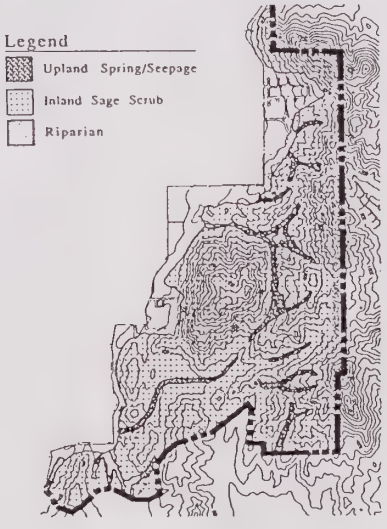
Topographical Analysis



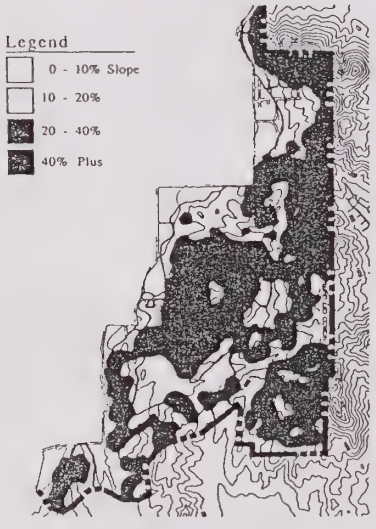
Visual Analysis



Soil Analysis



Vegetative Associations



Slope Analysis

HILLS INVENTORY MAPS

Primary conditions are attributes of extreme environmental importance. For this study, primary conditions included: the major (or primary) ridges; canyon wetlands and other moist areas with concentrated biological diversity; drainage areas; significant focal points; slopes over 40%; and unsuitable soil types. (In this case, rocklands are the only soil type considered unsuitable for development.)

Secondary conditions are environmental factors deemed important, but not critical to the site analysis process. Such conditions in this study included secondary ridges (those not on the skyline), Norco's viewshed, slopes of 20 to 40%, rock outcroppings and soils considered marginal for development.

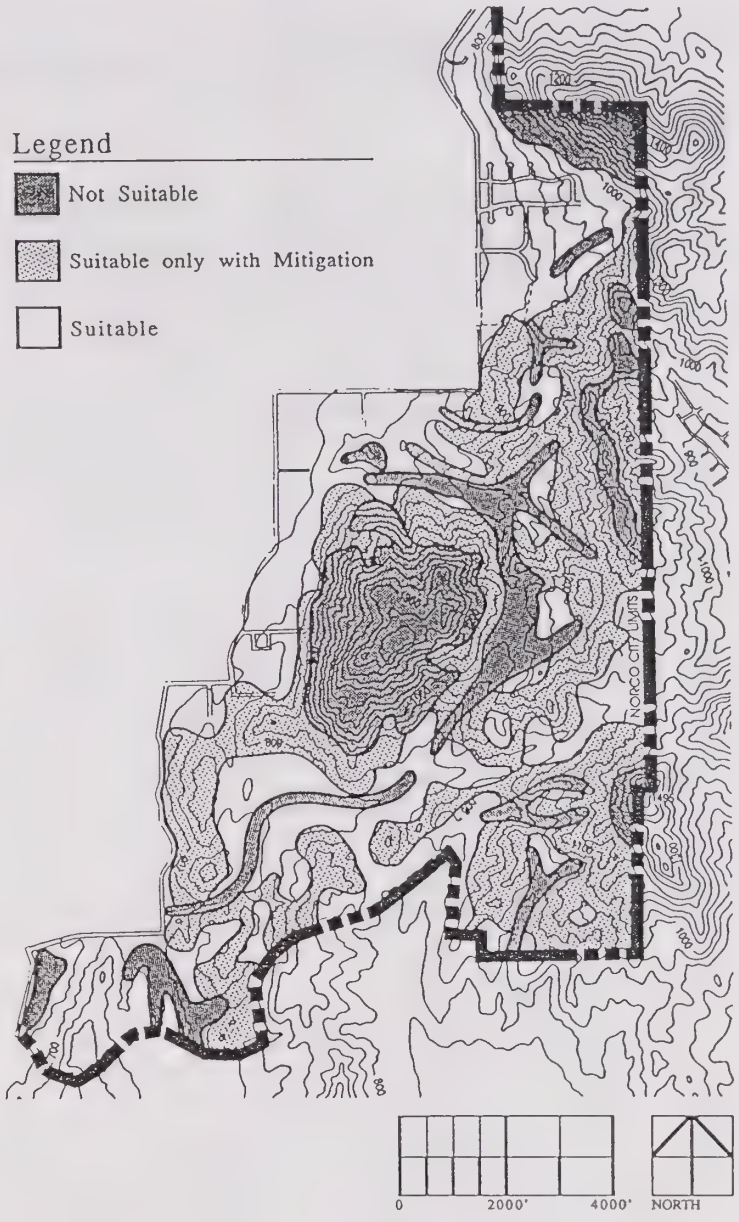
Areas are considered unsuitable for development when one of the following situations exist:

- One exclusionary condition
- Two primary conditions
- One primary and two secondary conditions
- Four secondary conditions

Development can occur with appropriate mitigation measures when the following situations occur:

- One primary condition, or
- Three or less secondary conditions

The suitability map shown here was derived from that process of elimination. Areas deemed unsuitable for development may be considered suitable for inclusion in the greenspace system.

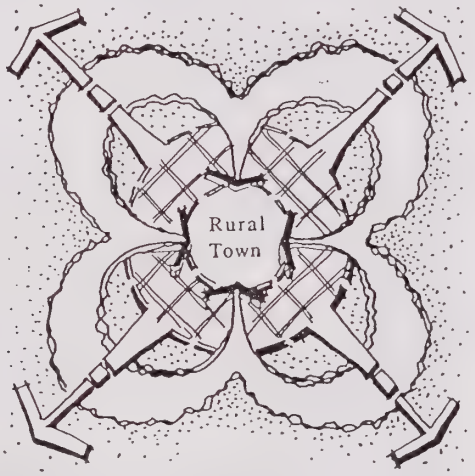


DEVELOPMENT SUITABILITY

Based on information presented in the previous sections, the 606 Studio has defined three design themes that together summarize the unique character of Norco. These themes are the "Rural Town", the "Spirit of Place" and the "Equestrian Community". Each theme represents the community concerns for greenspace and the importance of enhancing Norco's present character. The design themes are composed of visual elements to establish consistency of concept and their image in development of the greenspace system. In the design standards for the greenspace system the design themes and element will act as guides.

The Rural Town

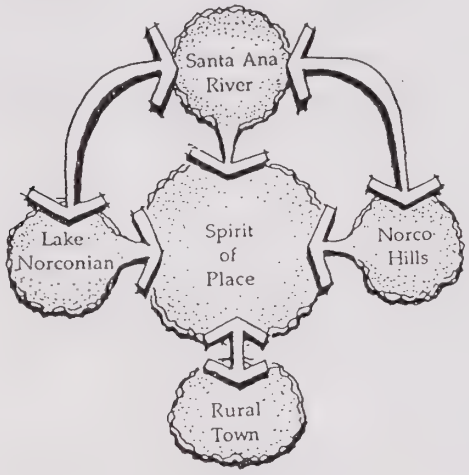
A rural town can best be characterised as a small community in a country setting that appreciates the physical as well as the symbolic experience of its natural features. Residents share the enjoyment of rural openness and freedom as well as small town amenities. The city's administrators must continue to define the community's character and support this image as development occurs.



Section VIII

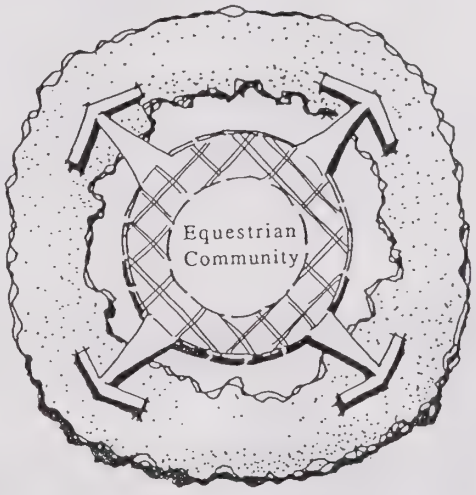
Spirit of Place

The Spirit of Place refers to the awareness of and relationship with the surrounding natural landscape that defines and supports a community's character. Three main features that define Norco's landscape are the hills, the Santa Ana River and Lake Norconian. Residents share the celebration of the natural landscape by focusing attention on these features. Elements of the natural landscape can be echoed throughout the built environment. Together, they embody the spirit of place.



Equestrian Community

The equestrian community theme acknowledges and enhances the existing equestrian trail system, primarily through the improvement and expansion of trails and related facilities. This expands opportunities for residents to travel freely on foot or horseback through local and regional landscapes, such as the hills and the river. It also offers spontaneous outdoors socializing along the trails. The equestrian theme can also be reflected in design features.



Design Elements

Each theme is charactrerized by certain specific elements that will enhance the visual quality and meaning of the greenspace system. Many of the following elements already exist in Norco in some form. The intent is to give these existing elements form and link them together in a systematic way, thus enhancing the utility and aesthetic value of the town and its landscape character.

The Rural Town

Commercial Areas
The main commercial strips of the town are located along Hamner Avenue and Sixth Street. Each reflects a different quality. Sixth Street provides the opportunity to develop a sense of continuity and tradition, while Hamner Avenue encourages a more contemporary character. Although each area will continue to have a somewhat different character, maintaining unity throughout is important. This can be accomplished by repeated forms, use of materials, street furniture, signage and quality plantings.

Community Network
Utilization of Norco's historic sites may encourage greater social interaction with the intention of fostering the community's appreciation.

Connections
Visual connections should establish continuity within the park system and the town as a whole. Park design guidelines will help establish this visual consistency.

Sixth Street and Hamner Avenue act as linear connecting elements in the commercial areas. These and other connections will eventually tie into a central green that would provide a focal core for the town. As the central green develops, it will provide a heart for Norco as well as a circulation hub, accommodating automobiles as well as equestrian, pedestrian and bicycle circulation and maybe even a few horse carriages. These routes will become part of the citywide trail system. Regional connections will allow equestrian, pedestrian and bicycling circulation across and along the Santa Ana River.

Natural Features
Natural features such as Beacon Hill, the Norco hills, and the Santa Ana River are essential to the rural town character and can be enhanced if view corridors and trail connections are utilized more effectively.

Site Amenities
Amenities such as benches, signage and sculpture, should reflect the rural character and concern of the community.

History
The community's appreciation for historic sites can be reflected in places such as the Community Center, the former Lake Norconian Resort, and other historic landmarks.

The Spirit of Place

Landforms
The existing landforms of the local hills and river provide much of Norco's natural character. Highlighting these landforms reinforces the relationship with place and increases the community's appreciation of its natural settings.

Visual Connections
Maintain the local and regional views to the major landscape and historic features.

Vegetation and Wildlife
Enhancing wildlife habitat and encouraging native plantings throughout the town can support the sense of place while promoting an ecologially sound environment.

Site Amenities
Site amenities and furnishings should reflect the forms and materials (such as granite boulders) of these natural features. Such amenities could be repeated throughout the park system and within the town's commercial areas to establish continuity among design features.

Commercial Areas
he commercial areas provide a great opportunity to reinforce the town's character through appropriate form and imagery and through a high visual exposure to the landscape.

The Equestrian Community

Visual Connections
Identifying and implementing areas for visual enhancement with the use of plantings or equestrain-related facilities can reinforce the city's rural character. A visual equestrian identity may occur along the I-15 freeway and Hamner Avenue. Particular areas for visual quality enhancement include the I-15 freeway to the 6th Street Exit, the 3rd Street and Hamner intersection, the 6th Street and Ingalls Park entry, and Hamner Avenue and River Trails Park entry. Enhancement by planting should include the use of native species.

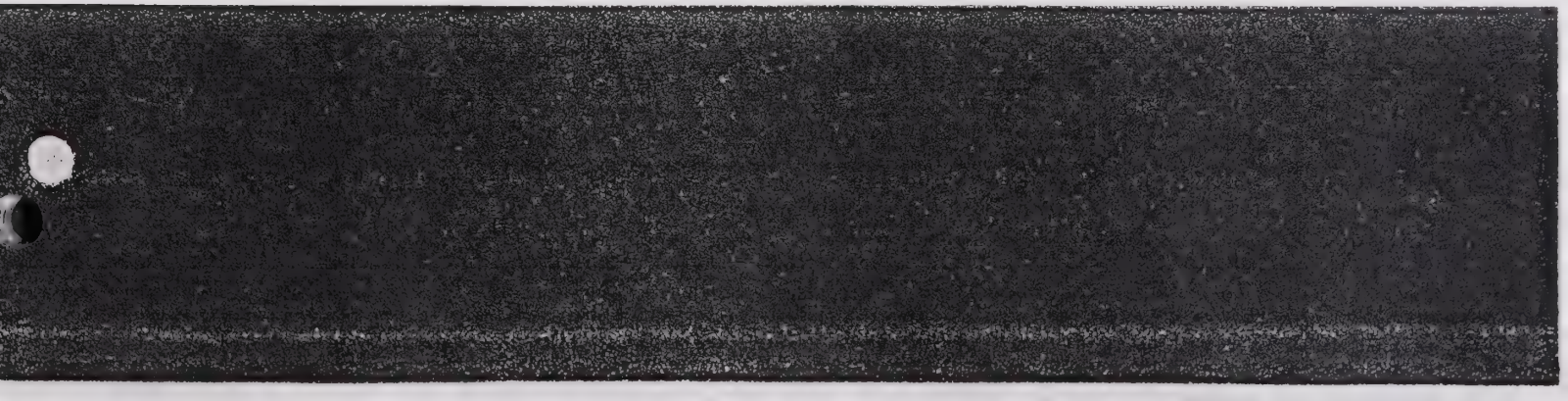
The Trail System
The trail system is a principal component knitting together the city and its design features. The system has potential to embody the town's rural character and become a unique symbol of Norco. It should be safe and adequately maintained for use. Equestrian trails are proposed to link together the central green park, the Sixth Street area, Ingalls Park, warm-up arenas, the river, the hills and other greenspace corridors. Regional connections should include linkages to the Temescal Wash, Lake Mathews, National Trail 100, Prado Regional Park and trail access to River Trails Park.

Natural Features
The settings that best enhance the equestrian community theme are the natural areas, such as Beacon Hill, the Santa Ana River and the Norco Hills. Regional features such as Prado Regional Park and the Lake Mathews are also of value.

Site Facilities
Warm-up arenas, equestrian-related services, show arenas, composting facilities and rest stops throughout the community and its park system will help accommodate the demand.

Site Amenities
Hitching posts located at various points along trails should provide shelter from the sun, together with watering troughs at major facilities.

Programs
Promoting equestrian-oriented programs at Riverside Community College and existing public schools, as well as through the parks department, will reinforce the equestrian community character.



The Trail System: An Interconnecting Matrix

The trail system will provide circulation for pedestrian, equestrian and bicycle use. This will accommodate the community's need for various modes of transportation and reduce conflicts between them. The system includes five types of trails: a central corridor; primary, secondary, tertiary trails; drainage ways and natural trails.

The trail system heirarchy organizes the community's circulation needs into a coherent pattern of movement which will minimize conflicts between pedestrians and equestrians. This system defines each trail according to its traffic volume, function and level of enhancement as being primary, secondary or tertiary. The trail system also utilizes existing drainage ways as to integrating elements. A brief explanation of the trail types follows.

Central Corridor
The primary role of central corridor circulation is to reinforce Norco's desire to retain its character in a increasingly urban region. Creating a more pedestrian-oriented environment will invite the community as well as vistors to share the Norco experience. Through appropriate planning and design within the central corridor context, Norco's commercial circulation system will support the town's unique character. Sixth Street and Hamner Avenue are the primary corridors for developing this rural town atmosphere.

Primary Trails
The primary trail system includes the major circulation routes which carry the bulk of traffic volume. This system will integrate pedestrian, equestrian and bicycle circulation within the town and minimize conflict through trail location and planting. The primary trails will connect major features throughout community, including Riverside Community College, the Civic Center/Business Park, Norco Hills, the Santa Ana River, and the other community facilities (schools and parks). It is important that surfacing and planting of these trails be carefully designed and well maintained.

Secondary Trails
Secondary trails connect to the primary and central corridor and to other features. They will be somewhat less intensively landscaped and maintained, as they carry moderate volumes of pedestrian and equestrian circulation.

Tertiary Trails
Since the tertiary trails carry only a small volume of traffic, surfacing and planting will be minimal, with greater landscape enhancement occurring during the later stages of greenspace planning.

Drainageways as Greenspace Corridors
Drainage channels provide an already existing network of interconnections. By allowing access, these potential greenspace corridors can easily be incorporated into the trail system. Some locations may require restoration to elevate aesthetic and ecological qualities of the greenspace system. Integration of the drainage channels will involve some surfacing and planting treatment as well as addtional trail safety measures. This also provides the possibility to incorporate retention ponds to help decrease urban runoff and enhance wildlife habitat within the corridor.

Natural Trails
Natural trails are located away from the surface streets, generally on the edge of the town. These trails are important in enhancing rural atmosphere because they give opportunities to experience open spaces. They can provide linkage to the regional trail system as well as local landscape features such as the Norco hills, the Santa Ana River and possibly Lake Norconian. These trails will accommodate hikers and equestrians, and in some situations, bicycles. Rest stops for pedestrians and equestrians will also be provided at intervals along the trail natural trails.

606 STUDIO

TRAIL SYSTEM

Greenspace for Norco

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

PARKS & RECREATION DEPARTMENT

Developing Norco's greenspace system will require a sequence of decisions to be made over a period of years or, perhaps, decades. For each stage of the implementation process, a set of key decisions is presented here in relation to the time when they must be made and including, in most cases, the 606 Studio's recommended course of action. In order to lend clarity to the overall sequence, decisions are defined in a matrix format. The subjects addressed include landscape features, existing parks, proposed parks, and trail system. The four greenspace stages are presented in plan form on the following pages.

Stage One: Immediate Decisions

Within this and the following three sections, a brief discussion is presented for only the key decisions required in the greenspace implementation process. Several critical decisions are impending on the following concerns.

The Central Green

Inasmuch as the proposed Civic Center/business park is currently in the planning stages, critical decisions must be made *immediately*. First, an arrangement must be worked out through which greenspace may be secured within the Civic Center complex. The acquisition of such a central space is highly recommended by the 606 Studio. (Please refer to the Section X, Planning and Design Recommendations, for greater detail.)

In addition to the creation of a central greenspace, an arrangement should be pursued to secure the visual greenspace provided by the knolls. These gently rounded forms serve as a grand backdrop for the complex, visible from the Interstate 15 freeway, and accentuate Norco's image as a rural town.

The trail system joining the central park area, Beacon Hill, Riverside Community College, the Santa Ana River and any future parks can be linked into the existing system in several places. The segments of this trail system can be acquired by purchase or developer dedication.

A joint-use agreement has been arranged between the college and the City of Norco, although details have not been resolved. Discussions should include the possibility of a joint-use equestrian/animal-husbandry facility on

Section IX

the campus. Another point of discussion should be the college's interest in the local natural areas as resources for educational programs. The rolling campus hills might be an appropriate location for a joint-use Frizbee Golf course, that was requested by one teenage resident. Possibilities should be explored for integrating campus outdoor space and circulation areas with the larger matrix of Norco's greenspace.

Norco Hills

The city should prepare and distribute a mail survey to determine the community's willingness to pay for acquiring permanent greenspace in the hills. (Refer to Section X.) If interest seems sufficient, a municipal bond proposition may be put to the voters for the purchase of all or a portion of the hill areas.

Areas in the hills that are unsuitable for residential development must be identified as greenspace to be secured through developer dedication. (Refer to the preliminary suitability analysis in Section VII and the acquisition strategy in Section X.) Trail easements should be a part of any developer agreement. Erosion control measures should be established on slopes along trails in critical areas. Private landholders in the hills, like Wyle Laboratories should be encouraged to protect and enhance wildlife habitat on their properties. Information packets on programs developed by the National Institute for Urban Wildlife should be distributed.

Santa Ana River

The existing restrictions on the use of Rivertrails Park by anyone other than equestrians, and the sign announcing them, should be reconsidered. The policy and sign are offensive and probably do little to deter the problems they were aimed at. The best deterrent to antisocial behavior in the riverbed is community surveillance. Rather than limiting the number of people who can use the riverbed, invite more in. A"Riverbed Watch" policy (similar to "Neighborhood Watch") with improved access for community members would discourage crime in this area.

The establishment of additional access points to the river on the west side of town should be considered as soon as possible. Concurrently with the establishing of a trail along the bluffs, safety features, such as fencing and slope stabilization, will be needed in critical areas.

Trail System

Of immediate concern is the completion of linkages among elements of the existing trail system and Norco's significant landscape features. Bicycle lanes should be considered on Sixth Street and other streets with primary trails. Pedestrian/equestrian crossings must be established across major traffic routes and the Santa Ana River, where possible. Completion of the Norco segment of the Santa Ana River Trail should begin as soon as possible after trail planning consultants have presented their plan. The establishment of properly designed trails in the hills is still another priority. Please refer to the matrix for other details.

Existing Parks

Appearance and function of the existing parks can be improved considerably by establishing and following design guidelines. Such guidelines should be applicable to the upgrading of existing parks as well as to design of new parks. Specific recommendations are included in Section V under Existing Parks and Park Inventory Conclusions. The addition of court recreational amenities should be considered for Snipes Park.

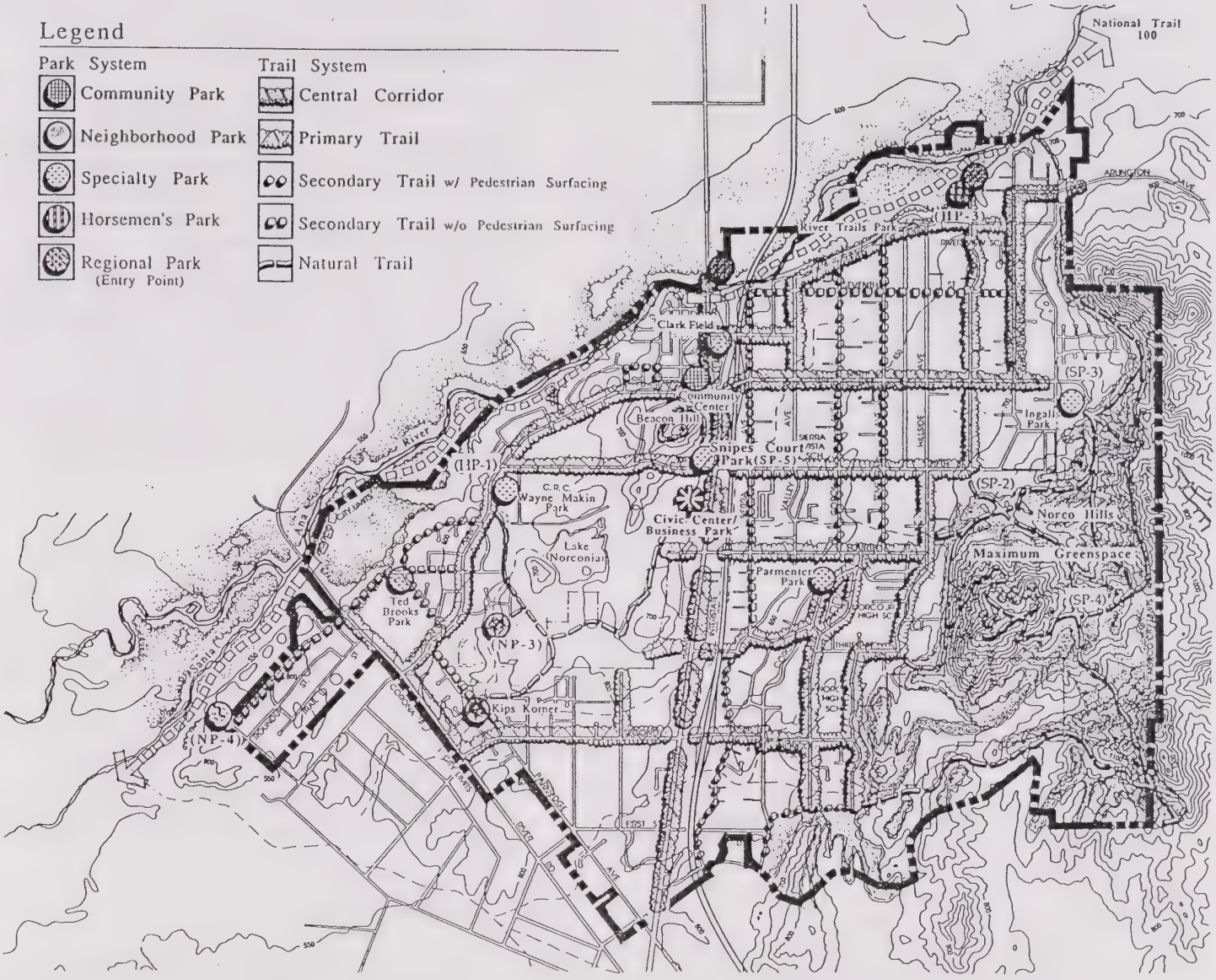
Proposed Parks

The proposed parks highlighted on the Stage One Greenspace plan view and detailed on the matrix include neighborhood (NP), specialty (SP), and horsemens parks (HP). A 1.7 acre park NP-3, is scheduled to be designed and built by the developer of the surrounding proposed tract. With a residential development and annexation proposed in "the bluffs" area, NP-4 is suggested as a high priority, considering the area's separation from the central body of the town. An ideal location would be property with river access and the size should be at least two to five acres. Considering the interest in carriage driving in this area, a larger area might be highly desirable in order to serve that group.

A high priority specialty park for land acquisition is SP-2, at the location popularly known as Pedley Field. As much of this land as possible should be acquired, especially the area of low hillocks near the main drainage. The drainage itself may be a part of a developer dedication. SP-4 should be obtained through a development aqreement as a less-than-fee acquisition, unless the community decides to purchase all of the area's developable lands. Inasmuch as the city owns the land, design work for the seven acres at SP-3 can commence. Please refer to Section X, Ingalls Plaza, for greater detail.

In order to provide riverside equestrian access and social spaces for the currently underserved west side of town, land for the horsemens park, HP-1 should be acquired as soon as possible. In that some of this property is state-owned, it may be possible to work out some kind of arrangement for part of the acquisition. Severe erosion is evident in the drainage gully that runs from Shadow Canyon toward the river here. Slope stabilization, revegetation and restoration of natural character should be carried out as soon as possible in this gully whose banks may someday hold shaded picnic tables. Installation of amenities for equestrians and other trail users should commence in the HP-3 area of Rivertrails Park.

Development of commercial areas may be accompanied by dedication of pocket parks in those areas. A particularly desirable area for a park of this type would be along Sixth Street, at P-1 or another location. A park of this type would serve the customers of the local businesses and their employees. It would provide shaded hitching facilities, water and benches for enjoying a cool sarsaparilla on a hot afternoon.



606 STUDIO

STAGE 1 - IMMEDIATE DECISIONS

Greenspace for Norco

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA ◻ GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

PARKS & RECREATION DEPARTMENT

Stage Two

The Central Green

If possible, the knolls property should be acquired or made available for public use by the Navy. This offers an ideal site for a large amphitheater which could serve community needs and might generate revenue. Amphitheater construction would commence as soon as land became available.

A cooperative agreement should be sought between the city and the Navy to establish a public recreation area on the western side of Lake Norconian with trail access. Lake fishing and fly tying can be a part of this program. Trail linkage should be completed between Riverside Community College and a proposed trail along the north drainage channel. Joint equestrian facilities for town and college use should be considered.

The Hills

Primary ridges, biologically diverse moist areas and other lands considered unsuitable for development should be dedicated as greenspace. Buffering lands should be acquired around the Mountain Park (SP-4). Wildlife corridors should be established through new residential developments by developer dedication.

Santa Ana River

Establish more multiple-use access points to the river. Consideration should be given to attracting appropriate development on some of the bluff-top lands within the commercial zone along Hamner Avenue. A high-quality restaurant or "River Inn" could provide additional surveillance of the river area, as well as providing a service for park users.

Trail System

Trails with safety barriers along the drainage channels become important linkages. Storm water retention and treatment ponds, with associated wildlife habitat, should be added at strategic locations along the channels. Pedestrian surfacing will be needed on specified trails. Regional trail connections link the eastern hills to the river and Lake Mathews area. (Refer to Section X.) A policy decision must be reached regarding mountain bike access to trails through the hills. This is of particular consideration for regional trail links. Limited mountain bike access should be allowed, emphasizing specific rules of trail etiquette. Refer to the matrix for other recommendations.

Existing Parks

Redesign of several existing parks should be undertaken with the help of design professionals. A new community center located at an expanded and redesigned Parmenter Park should be considered to serve the concentration of young people in that area. Teen and pre-teen facilities would be highlighted there. The city should consider selling the Clarks Field property and relocating its functions to a more appropriate location. SP-1 is an alternative site for ball fields. NP-1 would serve the neighborhood recreational needs.

Proposed Parks

A neighborhood park, NP-1, is suggested for consideration to fill the needs of that area. Located along a potential greenway corridor, this location has great potential as a neighborhood natural area. Construction of a warm-up arena at HP-1, within Rivertrails Park may be considered at this time. The provision of hitching facilities and water is desirable at the Mountain Park (SP-4). It may be possible to work out


Legend
Park System
Community Park
Neighborhood Park
Specialty Park
Horsemen's Park
Regional Park
(Entry Point)
Rest stop
Trail System
Central Corridor
Primary Trail
Secondary Trail w/ Pedestrian Surfacing
Secondary Trail w/o Pedestrian Surfacing
Greenway Corridor
Natural Trail
National Trail
100
(HP-3)
(NP-1)
Ingalls
Plaza (SP-3)
Beacon
Hill
(HP-1)
SP-5
Pedley
Field
(SP-2)
Civic Center/
Business Park
Lake
Norconian
Central Greenspace
Parmenter
Park
Maximum Greenspace
(NP-3)
Riverside
Community
College
(NP-4)
(NP-5)
606 STUDIO
STAGE 2
Greenspace for Norco
CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA
GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE
PARKS & RECREATION DEPARTMENT
0
1000'
2000'
4000'
6000'
NORTH

an arrangement with Wyle Laboratories to tap into the aquifer under its property. The water could then be pumped to the Mountain Park, by solar, wind or manual pumping mechanisms.

Develop SP-2. (Pedley Field) This park can serve a variety of functions: for sunset viewing of silhouetted Beacon Hill from the hill tops (as it is now used); as a natural setting for an adventure-style playground – thrilling but safe slides can be built right into the hillsides, here; the uplands as a natural area for low intensity family recreation and wildlife observation; the flatter lands below may be used for unstructured field play areas, picnic grounds and environmental play yards for tots. (The latter are environments in which children are allowed to discover natural processes through play with water, sand, plants and other natural elements.) Consideration should be given to acquiring land for SP-1, adjacent to Norco High School. A sports complex is recommended here. Such a use might complement facilities at the high school and a joint-use agreement may be worthy of consideration.

Stage Three

The Central Green

Public access to Lake Norconian may eventually be expanded to include the remainder of its setting and the casino club house may be made available for community social events. A direct trail link would be desirable between the Civic Center and the lake. Educational and interpretive exhibits might be developed by RCC along central green trails.

The Hills

Nodes of wildlife habitat can be created through restoration and enhancement of the indigenous vegetation. A hills trail patrol should be established with paid city personnel or volunteers.

The River

A formal trail patrol may be needed to police the river.

Trail System

The system should be expanded to include as many greenway corridors as possible. Linear park easements are should be acquired alongside them. Portions of the concrete channels can be redesigned to allow a more natural character. A trail patrol might be instituted. Wildlife habitat along the channels can be enhanced through revegetation with native plants. Revegetation might improve corridor habitats in the hills, as well.

A pedestrian/equestrian overpass is constructed to avoid Hamner Avenue traffic. Pocket parks are developed in commercial areas. Refer to the matrix for other recommendations.

Existing Parks

Consideration should be given to relocating the Ted Brooks warm-up arena to H-1. This park might then be redesigned to better function as a neighborhood park. Redesign recommendations may be considered for the Community Recreation Center. Additional amenities may be considered for Wayne Makin Park. Priority should be given to plantings for shade and buffering effects. Picnic facilities would be a second consideration.

Proposed Parks

Proposed parks would be developed including the sports complex at SP-1, the pocket park along Sixth Street, P-1 and horsemens parks, HP-1 and 3. Linear park easements may be acquired for greenway corridors.

606 STUDIO

STAGE 3

Greenspace for Norco

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

PARKS & RECREATION DEPARTMENT

0 1000' 2000' 4000' 6000' NORTH

Stage Four: Ideal Greenspace

The Central Green

In the ideal greenspace system, the city would acquire the Naval property including Lake Norconian and the surrounding buildings. The setting and buildings offer an attractive location for a revenue-generating conference center. Landscape enhancements would be added along the trail between the lake and Civic Center.

The Hills

Ideally, secondary ridges and large roadless areas will be conserved in the hills. Restoration and management of native ecosystems will support their persistence. Areas of the hills are designated as urban wildlife sanctuaries.

Santa Ana River

Restoration of native vegetation would be accomplished on a regional basis.

Trail System

Maximum landscape enhancement would be implemented along all trails including plantings at intersection nodes of central corridors. All drainage channels would be restored as greenway corridors.

Existing Parks

Redesign and landscape enhancement would be completed at all parks.

Proposed Parks

The mountain park, SP-4 would be fully developed as a back-country facility. Refer to Section XIII for details. Neighborhood parks of two or more acres would developed at NP-2 and 5. A horsemens park would be established at H-2. Pocket parks along Hamner Avenue would be fully developed. Linear parks would work symbiotically with the fully restored greenway corridors.

Additionally, recommendations for enhancing wildlife habitat and water quality are included along with animal waste alternatives in Section XIII.

606 STUDIO

STAGE 4 - IDEAL GREENSPACE

Greenspace for Norco

PARKS & RECREATION DEPARTMENT

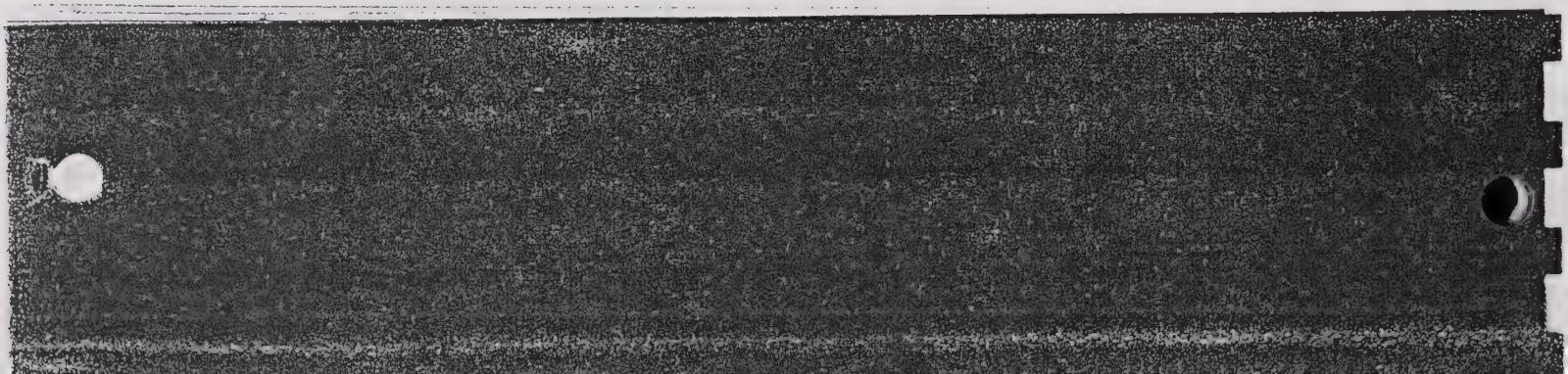
CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

Greenspace Stages - A General Implementation Guide

	Landscape Features (* see Lake Norconian in Central Park)			Trail System	
	Norco Hills	Beacon Hill	Santa Ana River	Hamner Avenue	6th Street
Stage 1 Immediate	• Identify sensitive areas and maintain these areas through developer dedication. • Minimum erosion control in vulnerable areas • Encourage wildlife enhancement on private lands • Determine the best method for acquiring greenspace in the hills	• Secure visual open space	• Preserve river's "natural state" • Provide pedestrian access • Establish hiking trails • Access to river basin from the east and west side of Hamner Ave. • Safety trail amenities along bluffs	• Establish trail ranking system • Minimum landscape enhancement	• Give minimum landscap[illegible] enhacenm[illegible] • Schedul maintenar program • Establish bike l
Stage 2	• Maintain visual open space • Conserve primary ridges • Maintain wildlife corridors in residential areas • Acquire land for greenspace buffer	• Establish trail system	• Provide more access points into the river basin • Establish trail maintenance program • Consider "River Inn" restaurant	• Provide landscape enhancement (trees and shrubs) • Incorporate seating	• Incorporate pede[illegible] paths • Also pedestrian an[illegible] equestrian rest st • Theme trail trea
Stage 3	• Maintain the mountain park visual greenspace • Conserve primary ridges with wider buffers • Develop nodes of enhanced wildlife habitat • Establish city or volunteer patrol	• Provide rest stops for pedestrians and equestrians	• Establish city of volunteer trail patrol	• Establish pocket park • Establish a paving system throughout (pedestrian circulation)	• Establish pocke
Stage 4 Ideal	• Maximize open space and visual open space • Conserve primary and secondary ridges • Maintain large "roadless" areas • Maximum hillside restoration, revegetation and management		• Restore native vegetation (must be done on a regional basis)	• Place planting islands • Landscape enhancement at intersection nodes • Maximum landscape maintenance program	• Maximum lands enhancement at intersection nodes

	Central Park				Existing Parks
	Connections	* Lake Norconian	Riverside Community College	Civic Center/Business Park	
Stage 1 Immediate	• Build trail system to link civic center, Beacon Hill, RCC and Santa Ana River and future parks • Provide hitching post along trail • Link trails to primary trail system		• Work out details for joint-use facility agreement. Consider frisbee golf course • Encourage the use of Norco's natural areas for educational purposes	• Establish "Central Green Park" • Maximum landscape enhancement • Protect visual open space of the "Knolls"	• Establish design guidelines • Utilize design professionals or local universities • Establish court facili[illegible]t Snipes Park • Expand access to schools
Stage 2	• Establish pedestrian and equestrian rest stops	• Open partial access • Establish a teen recreation or "adventure" program	• Incorporate warm-up arena • Encourage an equestrian/animal-husbandry progam • Develop an entry statement along trail • Link trails to drainage channel	• Extend property to include "Knolls" • Incorporate amphitheater into "Civic Center Park"	• Utilize design professionals for park redesign • Relocate facilities at Clarks l and sell property. • Establish new community cent facility at Parmenter Park
Stage 3		• Give full public access to lake and clubhouse	• Incorporate educational exhibits along trail	• Establish direct trail linking civic center and Lake Norconian	• Implement park upgrades in accordance with redesign • Redesign Ted Brooks Park a relocate warm-up arena to Horsemen's Park (HP-1)
Stage 4 Ideal		• Navy no longer present	• Expand joint-use facility agreement	• Implement trail enhancement (landscape) to Lake Norconian	

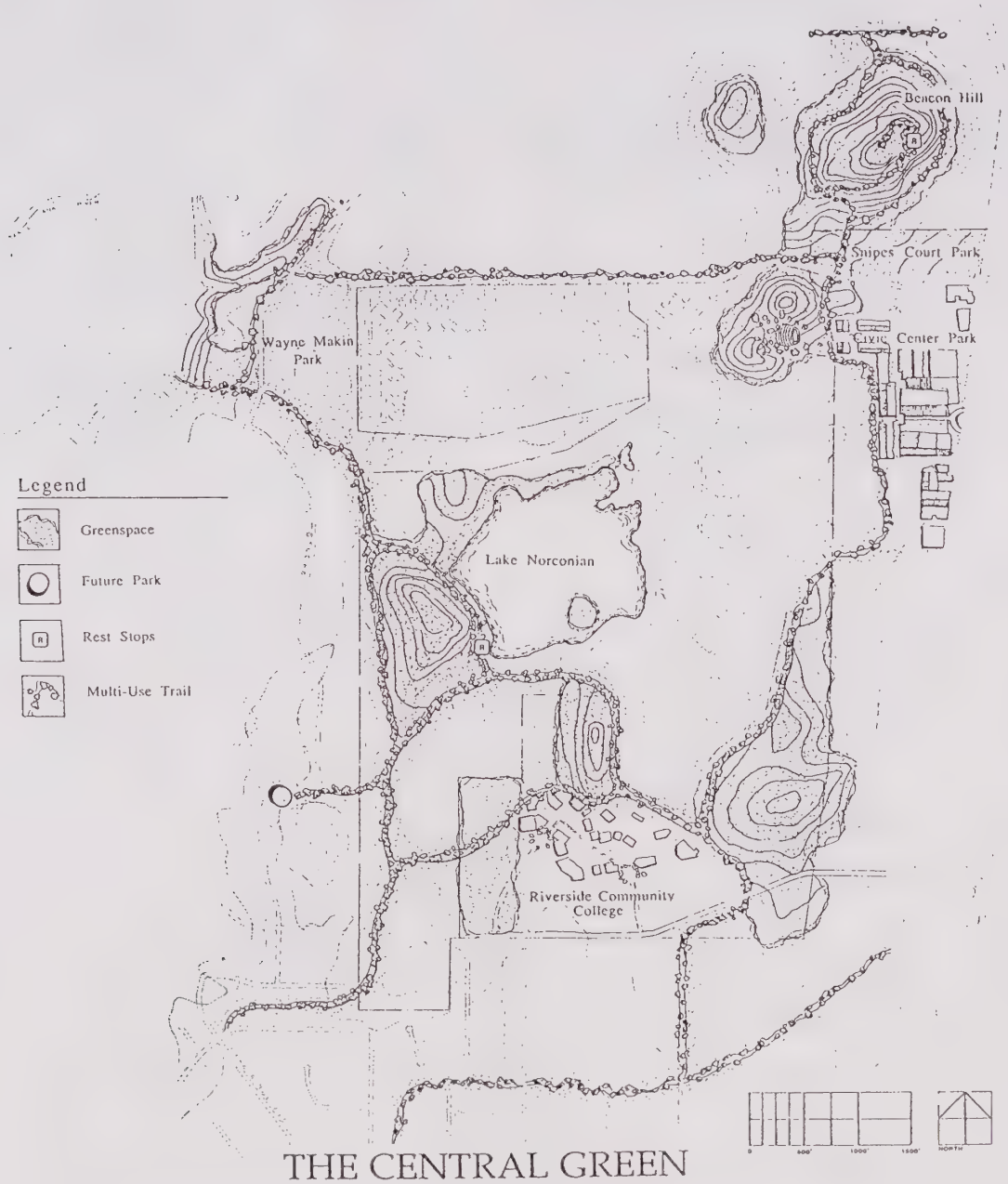


Trail System (continued)

Primary	Secondary	Tertiary	Drainage Channels	Natural Trails
• minimum landscape enhancement • Establish bike lanes • Link trails to drainage corridors and landscape features (hills and river)	• Provide minimum landscape enhancement		• No Access	• Establish trail crossing at Hamner Ave., River Rd., & Arlington • Establish mountain trails • Connect to National Trail 100 • Provide minimum access to river and hills • Implement minimum erosion control treatment
• Incorporate pedestrian paths • Build partial barrier treatment • Modify horse crossing (more continuous surfacing)	• Incorporate pedestrian paths and link to major features, such as parks and schools.	• Implement additional landscape enhancement	• Minimum access • Place safety barriers • Incorporate storm water retention ponds • Restore earthen channels	• Link mountain trails to regional trails • Restore hillside with native vegetation in areas outside of designated trails •Allow mountain bike access: yes/no?
• Implement full barrier treatment	• Place additional barriers	• Incorporate "soft" shrub barriers	• Develop trail system fully • Establish linear parks • Enhance wildlife habitat • Restore portions of concrete channels (riprap and vegetation)	• Hamner Ave. bridge overcrossing • Provide shade trees (native) along trails • Enhance wild corridor vegetation
• Give maximum landscape enhancement	• Give maximum landscape enhancement	• Give maximum landscpe enhancement	• Restore all drainage channels	• Santa Ana River bridge overcrossing • Maximize access points to river and hills • Maximize erosion control treatment • Maximize vegetative enhancement of wildlife corridors

Proposed Park

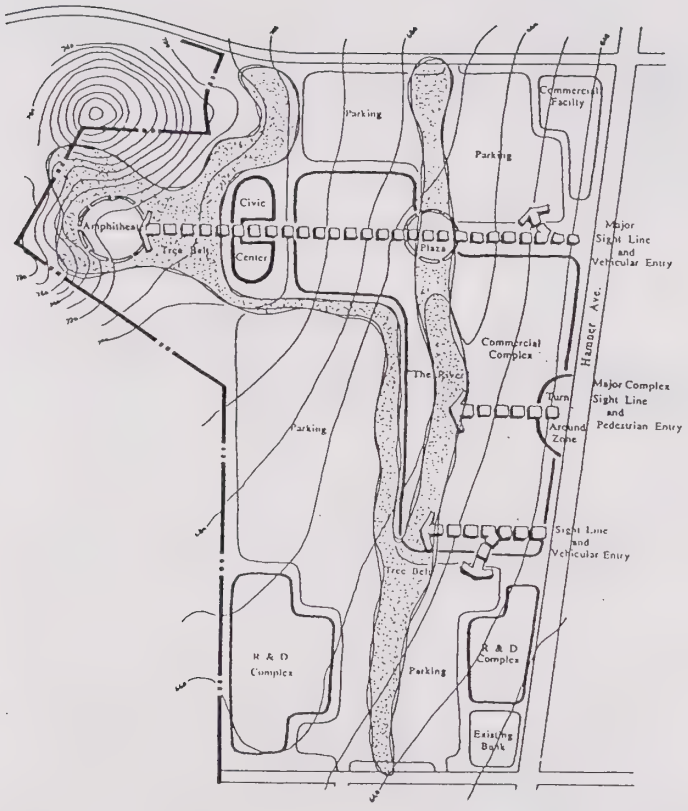
Neighborhood Park	Specialty Park	Horsemen's Park	Pocket Park	Linear Park
• Neighborhood park (NP-3) • Neighborhood park (NP-4)	• Acquire land for Specialty park (SP-2) • Design Specialty park (SP-3) • For (SP-4), work out agreement with developer to acquire land, maintain trail access	• Acquire land for Horsemen's park (HP-1) • Develop Horsemen's park (HP-3) • Provide erosion control	• Park dedication	
• Neighborhood park (NP-1)	• Develop Specialty park (SP-2, SP-3) • Acquire land for Specialty park (SP-1) • Provide water and hitching post for Specialty park (SP-4)	• Warm-up arena for Horsemen's park (HP-1) • Consider amphitheater (HP-3)		
	• Develop Specialty park (SP-1)	• Develop Horsemen's park (HP-1) • Develop all Horsemen's park (HP-3)	• Develop pocket park along 6th St.	• Acquire easement • Minimum landscape treatment • Establish trail patrol
• Neighborhood park (NP-2)	• Develop Specialty Park (SP-4)	• Acquire land for Horsemen's park (HP-2) and start development process	• Develop pocket parks along Hamner Ave.	• Develop Linear parks (LP-4, LP-5) fully • Develop remainder of Linear parks



THE CENTRAL GREEN

Planning and Design Recommendations

Section X



CIVIC/BUSINESS PARK DESIGN CONCEPT

This section contains specific recommendations concerning form and content of key components of the greenspace system proposed in Section IX. In the larger context of the whole system, these might be considered as design details. It is such details that can realize the full potential of the system.

The Central Green

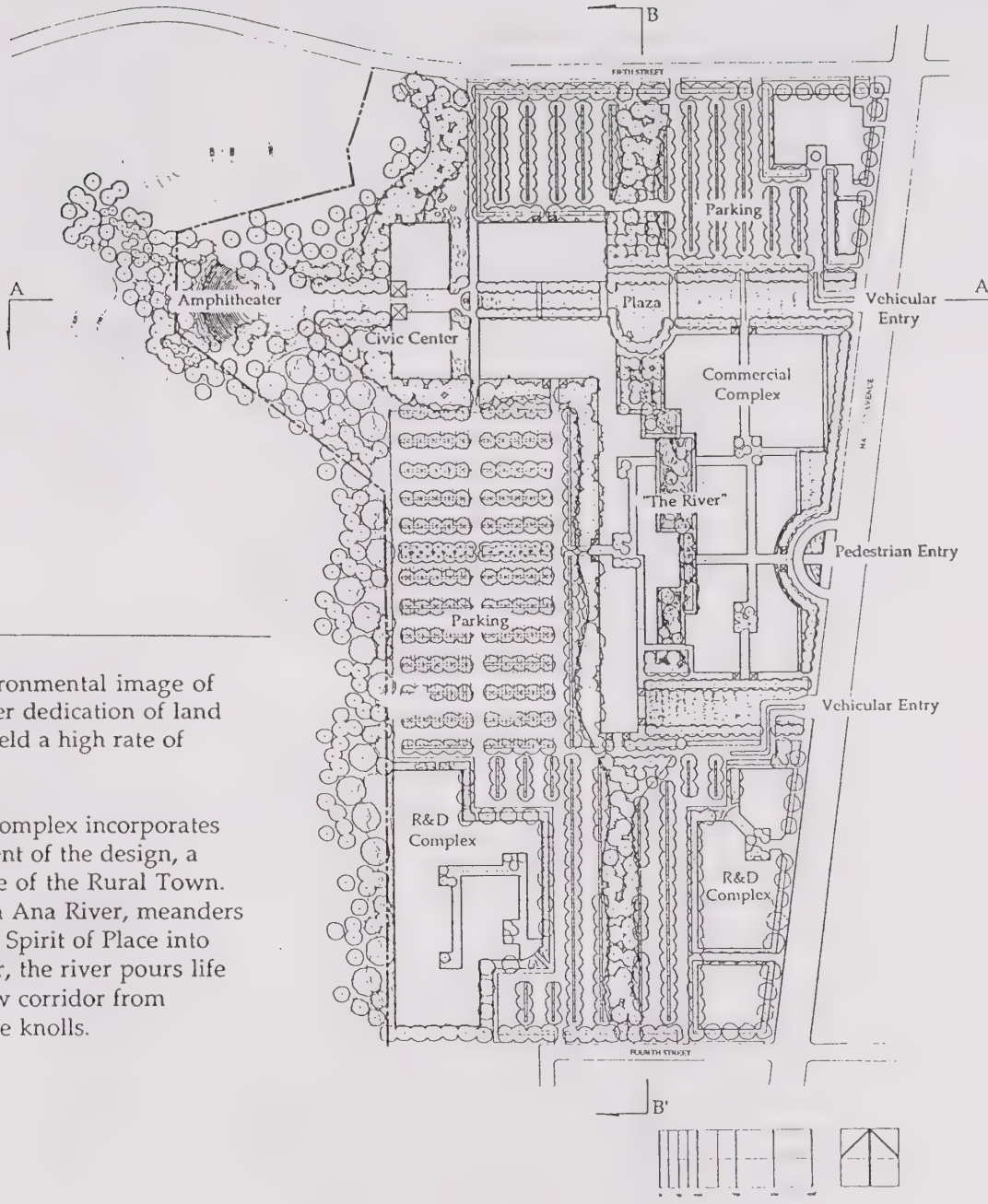
The central green forms the interior hub of the greenspace system. Its central location provides a nucleus for the community trail system and gives the town a vital central focus that combines private and public uses of the land. It also allows for the retention of areas of open greenspace. Elements included within the central green are: the proposed city Civic Center/business park with a proposed urban greenspace plaza and amphitheater, the Riverside Community College campus and Lake Norconian. A trail network binds these elements together and connects them via trail easements to: Sixth Street, a vista rest stop at the crest of Beacon Hill and through Wayne Makin Park to the horsemens park, H-1, and the Santa Ana River.

A Central Plaza

An arrangement must be worked out through which greenspace may be secured within the Civic Center complex. Greenspace within the complex will add vitality to the business environment. It will be used by the customers and employees of the businesses surrounding the greenspace and provide an additional attractant to draw people into the business district.

ELEVATION A – A'

ELEVATION B – B'



Greenspace will enhance the environmental image of the central business core. Developer dedication of land for greenspace in the center will yield a high rate of return on the investment.

The site design suggested for the complex incorporates greenspace as an integral component of the design, a central plaza reinforcing the theme of the Rural Town. Its form, abstracted from the Santa Ana River, meanders through the complex, bringing the Spirit of Place into the town center. Near Civic Center, the river pours life into a grand allée that offers a view corridor from Hamner Avenue, directly up to the knolls.

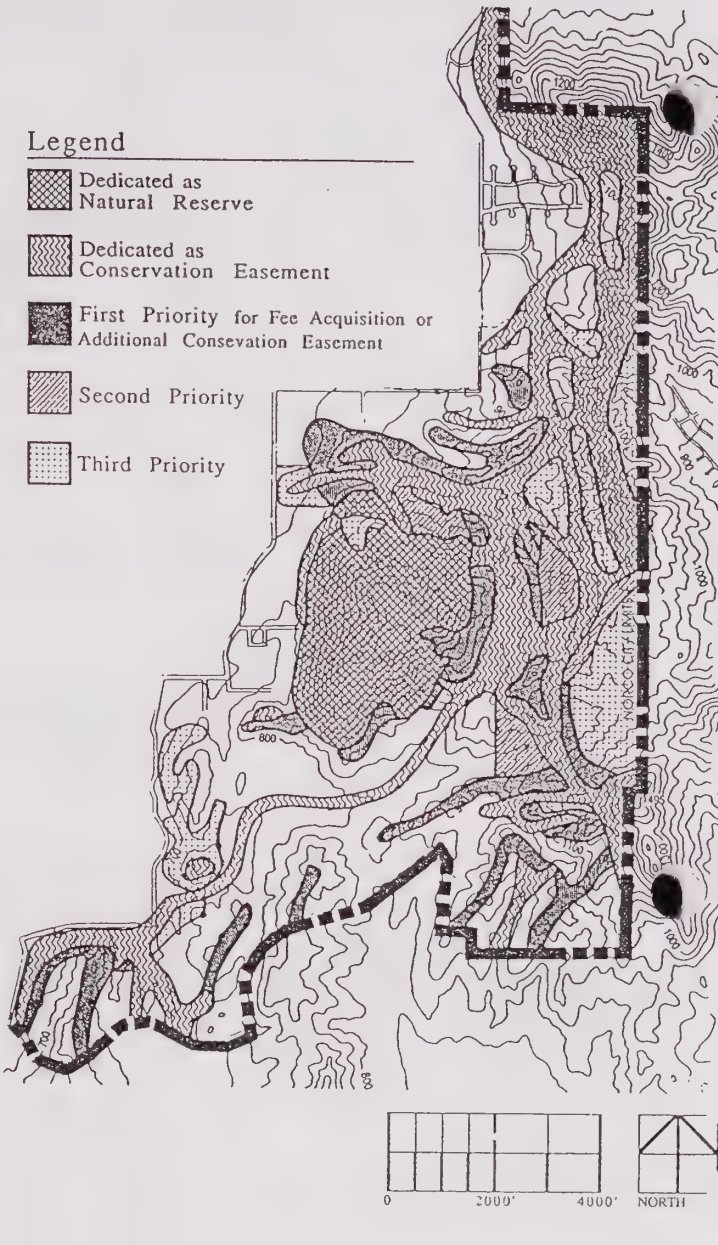
The Hills

Acquiring the Greenspace

The resolve of the community to maintain greenspace in the hills should be polled. Late in the focused interview process, a question was added to the poll asking residents how much their household would be willing to contribute annually toward the preserving open space in the hills. Inasmuch as only a few citizens were queried on that issue, their answers are not included in the Greenspace Demands and Trends discussion; however, the few responses received were strongly positive. Figures offered ranged from $200 to more than $1000 per year. These figures, high compared with responses to similar questions asked in other parts of the country, indicate the possibility of a greater community sentiment in Norco for conserving the natural landscape.

The city should prepare and distribute a mail survey to determine the community's actual commitment to acquiring permanent greenspace in the hills. If interest seems sufficient, a municipal bond proposition might be put to the voters. The tax base provided by planned commercial developments in the city may provide the city with greater future revenues to repay such an obligation.

Any development in the hills will require the dedication of critical greenspace for for wildlife and human corridors. The areas recommended for developer dedication are shown in the greenspace aquisition strategy which is based on the suitability model in Section VII. In addition to the critical wildlife habitats of the drainage corridors, it will be necessary to conserve large areas of the open shrublands to allow for the continuance of their special wild inhabitants.



ACQUISITION STRATEGY

Some of this conserved habitat will be on the rocklands of the radio facility peak, where slope and soil conditions combine to render the land unsuitable for development. [Perhaps a contest among the local students might find a *name* for this peak.] Ideally, any development will conserve several large shrubland patches of varying slope and aspect and connect them with corridors. Residents of the proposed developments will be rewarded with the sweet song of meadowland birds.

In addition to developer dedication, the community may decide to purchase additional greenspace. The order of priority for such purchases is indicated on the stradegy diagram The basic strategy is to conserve an increasingly larger buffer area around the mountain park with its bisecting regional trail. The ideal result would conserve a large roadless area for the benefit and attraction of human and wildlife residents.

Restoration and Management

The quality of the hills greenspace can be improved by long-term restoration and management. Reintroduction of native perennial bunch grasses would be a worthy challenge for certain areas. This might be pursued with the assistence of local educators and volunteer crews. Eroded drainage corridors would benefit from restorative stabilization with their natural plant cover. Management of shrub and grassland communities can facilitate their long-term viability. Where these communities interface with residential communities, fire management measures will preclude serious problems. Selective thinning and pruning of the shrubs can be accomplished in transition zones near residences, leaving much of the natural beauty of the land intact. In some fire-prone plant species, the newer vegetation holds lower concentrations of volatlile oils. Timely prunings can reduce the potential for spontaneous combustion. Prescribed burning can avert problems as well as regenerate both shrub and grassland communities.

For grassland communities an additonal alternative to prescibed burning is managed grazing. Sheep can be brought in to graze areas at a time when exotic annual species are setting seed, that is the sheep do the weeding. They are never permitted to remain in or return to a revegetated area more than that area can sustain.

Through proper management, the hills can become a living museum for indigenous species.

The Mountain Park

With a regional trail bisecting its axis, the mountain park can provide an entry statement for trail travelers coming into Norco. The natural landscape is featured here with judicious additons of shade-giving oaks. Other ammenities include, in order of priority: shaded hitching posts; water pumped by solar, wind or hand-powered pumps (possibly from a source on Wyle Laboratory property); and rustic picnic tables. These tables and seats might be huge flattish granite boulders to blend organically with their environment. An example of seats done this way can be seen at the former Rocky Hills Hideaway. (Refer to Regional Corridors in this section.)

As Norconians enter the park from the northwest canyon, the view of the prominent peaks of La Sierra might be framed by Engleman or Coast Live Oaks. The opposite entry might receive a similar treatment. The open feel of the landscape should be retained. The valley bottom can become a carpet of Purple Needle Grass, Stipa pulchra and other perennial native grasses. Drifts of oaks may be added in a few locations. Hitching and picnic facilities will be located under these. All landscape plantings must be sustainable without suplemental irrigation, once established.

This park may be maintained as a strictly day-use park or might be opened up to a few back country-style campsites for overnight use by regional trail travelers. A pack-it-in–pack-it-out policy should be promoted. Periodic pick-up by paid or volunteer crews will undoutably be necessary, as well.

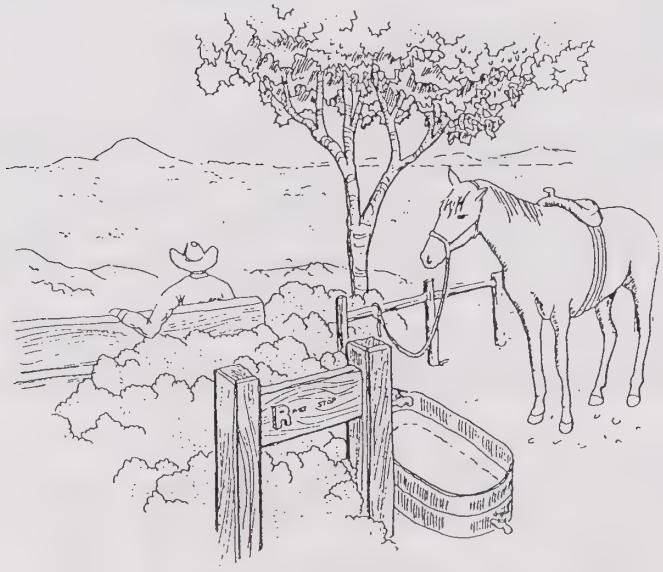
Rest Stops

A major component of the greenspace system is the trail network. The trails and their facilities such as rest stops should convey the town's emphasis on maintaining its rural character. Rest stops located at various points along the trails will provide relaxing space for the equestrian traveler as well as those on foot. Rest stops located in the Norco hills, near the Santa Ana River, top of Beacon Hill and near Riverside Community College/Lake Norconian area, offer the traveler the opportunity to enjoy the scenic value of the landscape with possibilities for greater social interaction. Rest stops should incorporate amenities such as shelter from the heat, seating, hitching posts and potable water at some locations, all in an effort to provide a comfortable environment for the traveler.

Wildlife Sanctuaries

Private landholders can demonstrate their commitment to maintaining a healthy wildlife community by creating sanctuaries on their lands. Wyle Laboratories is particularly encouraged to consider a commitment to habitat conservation. The National Institute for Urban Wildlife manages The Urban Wildlife Sanctuary Program which certifies, publicly recognizes and provides management information and other benefits for private land holders who allow wildlife sanctuaries on their property. For more information, contact:

Urban Wildlife Sanctuary System of the
National Institute for Urban Wildlife
10921 Trotting Ridge Way
Columbia, MD 21044 (301) 596-3311

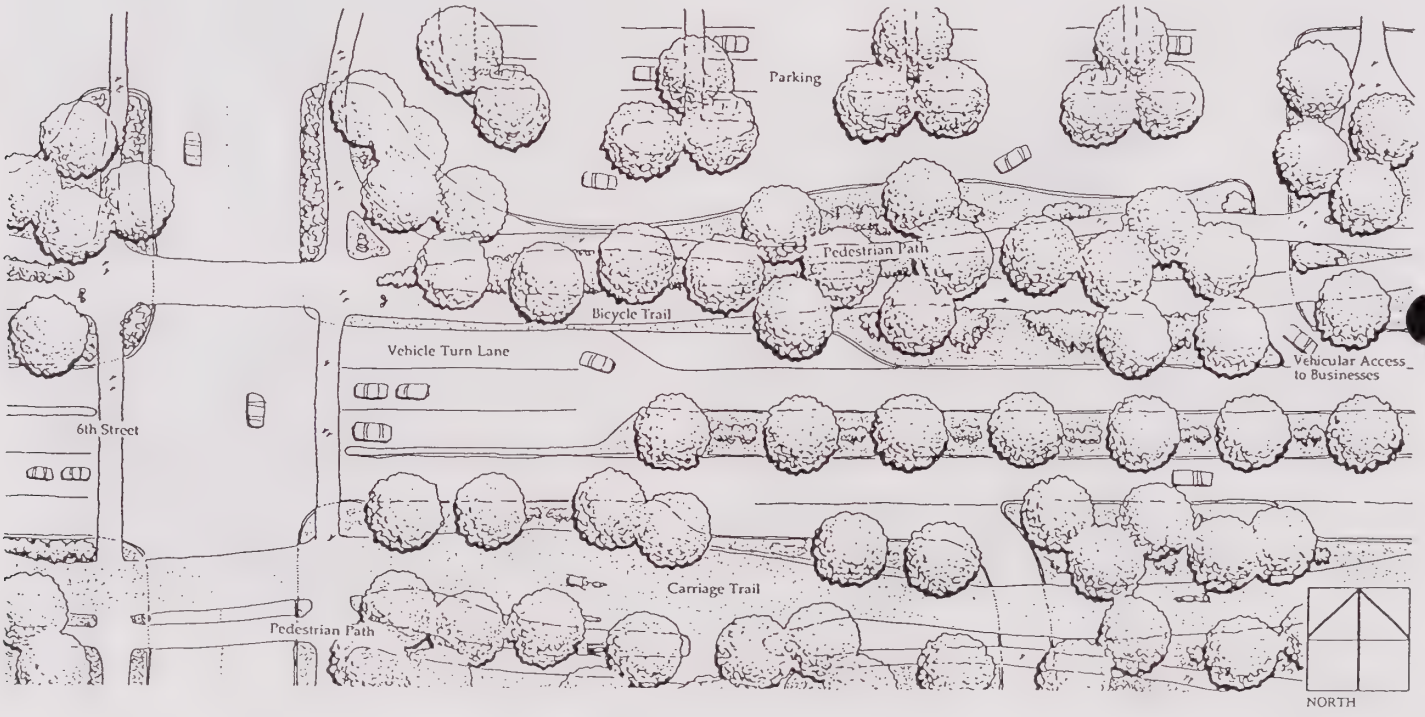


Sixth Street

Because of its equestrian commercial and community emphasis, design for Sixth Street should enhance the existing business environment as well as allowing for future growth. Landscape theme plantings, store-front design, equestrian circulation, and traffic slowing elements, for example, can reinforce the equestrian community theme of Norco, including its focal point, the Ingalls Park Plaza at the east end of Sixth Street. Design improvements can also accommodate a growing recreational activity, the use of horse-drawn carriages and pony carts.

Information, including minimum and maximum requirements for trail width, turning radius, escape routes and other design considerations for horse-drawn-carriage and pony-cart trails, was provided by David and Coleen Politte, owners of Classic Horse-drawn Carriages in addition to other Norco citizens involved in the Heels and Wheels Club. Coincidentally, Riverside County is currently developing design guidelines for horse-drawn–carriage trails.

Vehicles and pedestrians can infringe upon or enhance the business environment. Adding carriage trails requires sensitive planning and broad cooperation among business owners and community groups in order to produce optimal benefit. Sixth Street is experiencing dramatic changes because of the I-15 freeway completion in April 1989. As motorists enter and exit the freeway, there is a temptation to exceed speed limits along the wide, straight thoroughfare that is the existing image of Sixth Street. Elimination of some traffic lanes along with



SIXTH STREET CIRCULATION CONCEPT

strategically placed stop signs and, perhaps, a traffic signal could significantly reduce traffic speed, thereby creating a more hospitable community environment for the patrons of local businesses. Planted median strips can reduce the confusion and danger posed by cars turning across traffic at every business entrance.

The plan view illustrates one circulation possibility: 12 foot wide vehicle lanes with turning lanes set into median strips; pedestrian circulation on both sides of the street; a 20 foot wide carriage and horse trail on the south side of the street; and a 10 foot wide bicycle trail on the north side of the street with barriers. The 20 foot width is recommended for the carriage/horse trail in order to allow horse riders and carriages going in both directions to pass each other as well as to allow necessary carriage turn-around space. During Western Week, Fourth of July and other festivals, Sixth Street might be closed in order to allow for hay rides and other equestrian activities related to Ingalls Park at the culmination of the street.

A landscaped pedestrian path on both sides of the street could provide benches and pooling areas for business patrons and other travelers along Sixth Street. Masses of shrubs might undulate along the edges of the equestrian trails. Tree canopies offer cooling shade while shrub plantings strengthen the barrier between auto traffic, pedestrians and equestrians establishing a feeling of greater security for animals and people.

The following landscape plant palette, based on the "Spirit of Place" theme emphasizes water-conserving local native plants: Street trees: Platanus racemosa (Western Sycamore); Quercus engelmannii (Mesa Oak) and Quercus agrifolia (Coast Live Oak); Shrubs: Rhamnus californica 'Eve Case" (Coffeeberry), Prunus illicifolia (Holly Leaf Cherry), Mahonia aquifolium 'Golden Abundance' (Oregon Grape–although this is not a local native, its parent species is native to Northern California); Ground Covers: Baccharis pilularis (Coyote Brush), Iva hayesiana (Hayes Iva).

Additionally, granite boulders from the local hills can provide indigenous sculpture where strategically placed in the landscape. These can be partially submerged into the ground for a natural appearance. Smaller rocks can be used as a ground cover, applied in meandering patterns that mimic the flow of the nearby river.

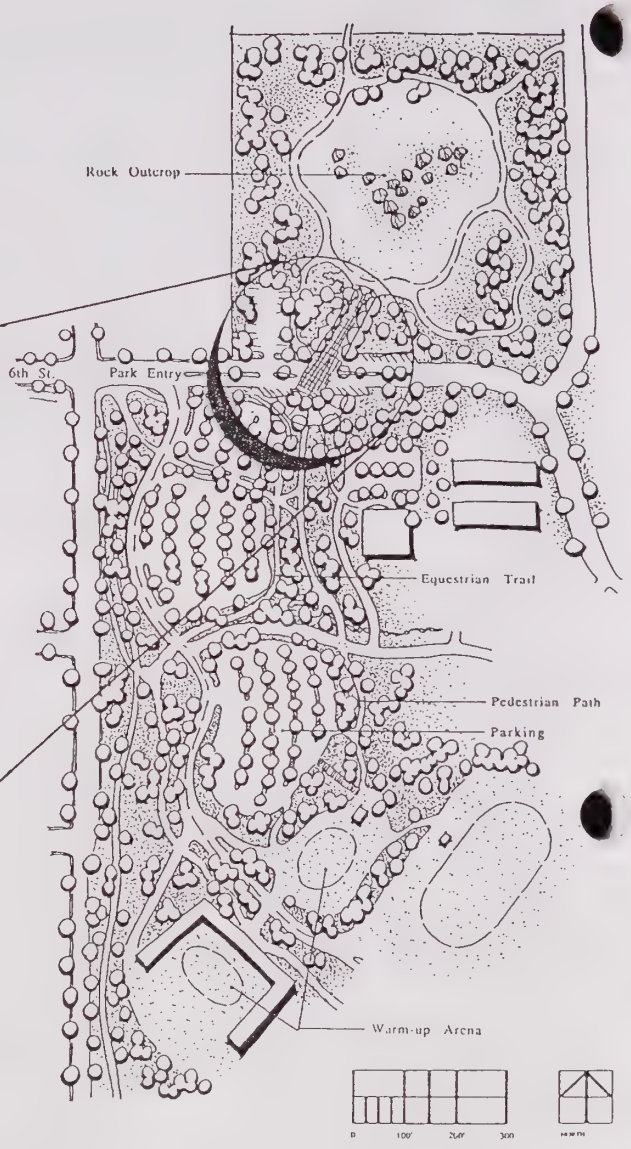
Inasmuch as Sixth Street is currently lined with immature Eucalyptus species, a successional approach can be used to gradually transform the landscape. Planting can begin with dense drifts of fast-growing Sycamores that will be thinned out later as the slower growing oaks mature. These trees are compatible with the existing Eucalyptus in their horticultural requirements.

The Holly Leaf Cherry and Coffeeberry are good choices for dividing the horse and carriage trails from vehicular traffic. These may be alternated rhythmically with other shrubs in a hedgerow of varying height and width for a pleasant undulating character. Because a dense but penetrable barrier better serves equestrians in case of emergency than an impenetrable one, escape routes for frightened horses must always be integrated into the design of city trails. In residential areas, driveways normally allow for these escape routes.

Ingalls Plaza

A seven-acre site located north of Ingalls Park offers a ready opportunity to develop an outdoor spaces for cultural events, community celebrations and recreational activities, and settings for informal community interaction. This space would accommodate special events such as the annual Valley Days Fair and future farmers markets or sales by local craft vendors. Site amenities might include water features, sculptures and an intimate (usable) environment for people. The plaza would function as a linking element between Ingalls Park (high-intensity use) and a neighborhood-park (low-intensity use) environment and would also act as a focal point at the eastern end of 6th Street.

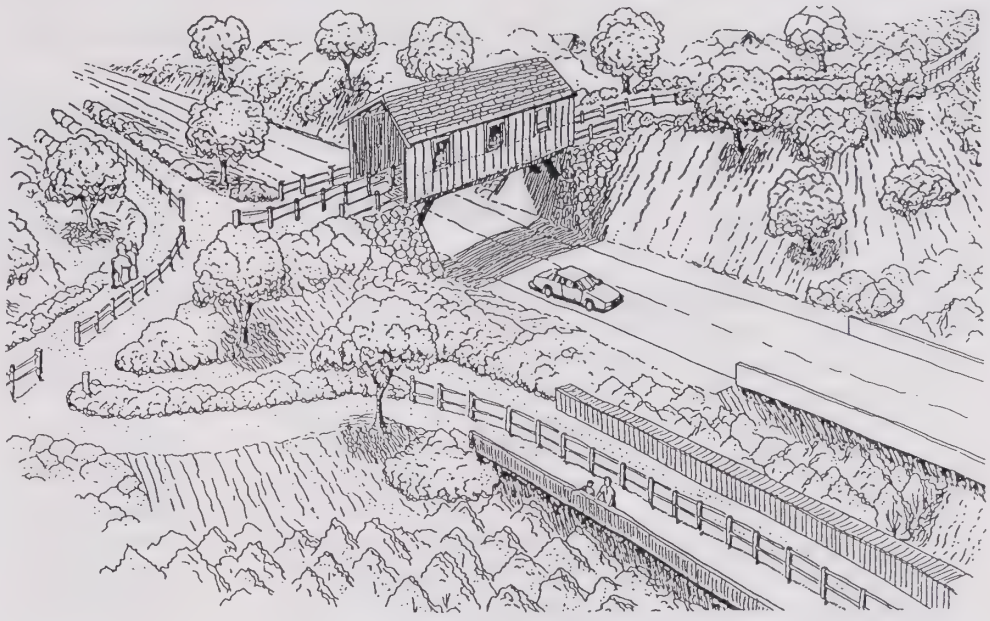
INGALLS PLAZA



INGALLS PARK

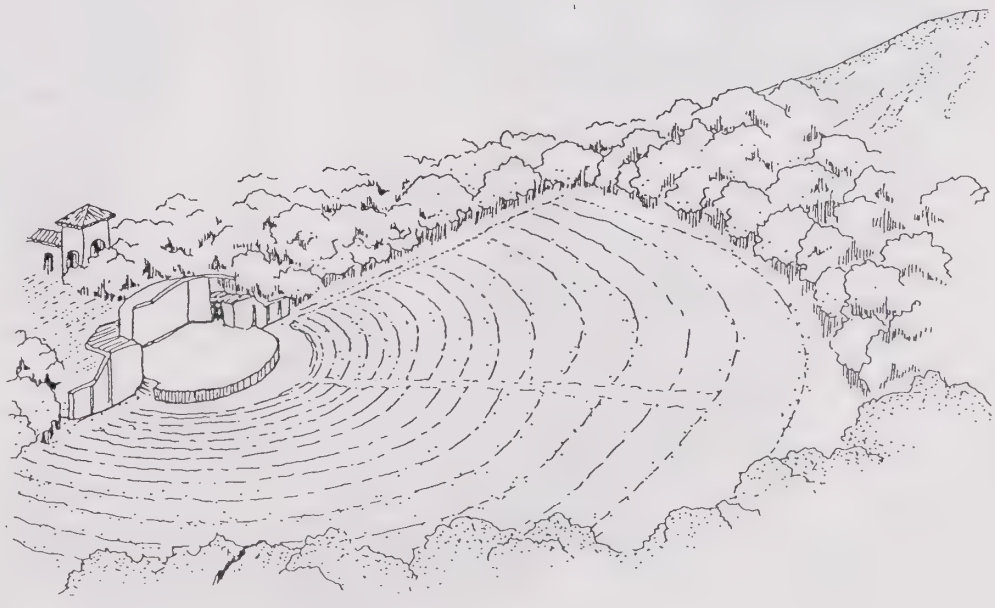
Trail Overpass

People and horses need crossings over water and traffic that allow them refuge from fast moving automobile traffic. Horses are even more sensitive to vehicular distractions than are people. Overcrossings can be extremely trying to horses when they can see the movement of traffic or water below them. Crossings should be designed with this consideration in mind.



Amphitheater

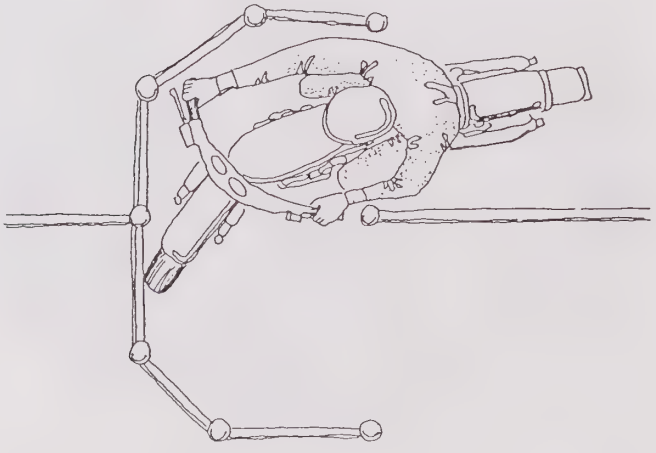
An outdoor amphitheater offers a setting for a broad range of community functions as well as opportunities to explore and enhance awareness of the arts. Attractions may include the once annual blue-grass festival as well as the home for future theater groups. Appropriate planning and design of an outdoor amphitheater can reinforce the town's rural character. Such facilities should be incorporated into the natural landforms to establish this natural character. These facilities are revenue generating opportunities to assist in offsetting expenses for management and maintenance of greenspace.



Trail Access

While measures must be implemented to prevent off-road vehicle (ORV) access to recreational trails, many barrier designs fail to allow access for people with physical limitations who travel in wheel chairs and with other aids.

One suggestion for a barrier design was described verbally over the telephone to design team members by Nancy Wallrich of the Sierra Club R.O.A.D. (Recreational Outdoor Accessibility for the Disabled) Committee. She described a gate installed on a trail in the Nicholas Flat area of Leo Carillo State Beach. This passage was designed by Sierra Club member Lou Levy and was described by Mrs. Wallrich as being S-shaped in plan view. Passers-through must negotiate a turn that is just wide enough for wheelchair passage yet too narrow to accommodate the turning radius of an ORV. The illustration is an interpretation of that concept which can be inexpensively installed at access points to all natural area trails.



Pedestrian Surfacing

A pedestrian alternative to the decomposed granite and dirt equestrian trails can be provided in Norco, while maintaining the rural atmosphere effected by the absence of concrete sidewalks. One such surface treatment goes by the trade name of Eco 550. This material is composed of polymers which are applied to roughened native soil, mixed in and allowed to harden. The composition can be varied by including portland cement, colorings and other additives, depending on the desired effect.

The resultant surface is smooth enough to accommodate strollers and wheelchairs. Depending upon the additives, the surface can offer significant shock absorbancy, important to joggers and walkers, similar to that effected by asphalt paving. Without the addition of colorings, the surface will appear the color of the native soil when it is wet.

Eco 550 and other products are available from:

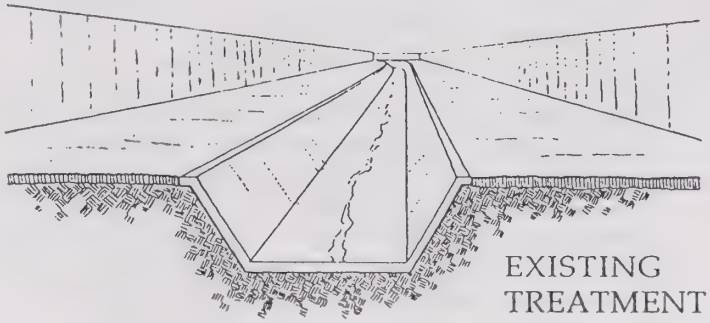
American Soil Technology Corporation
15581 Product Lane, C-13
Huntington Beach, California 92649

(714) 898-4171

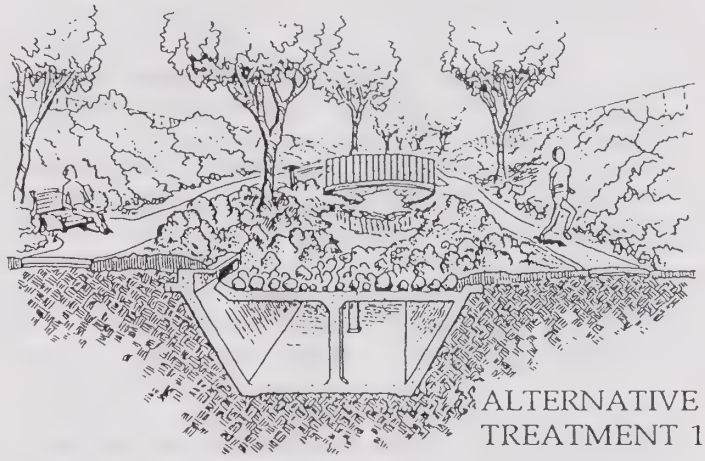
Drainageways as Greenspace Corridors

In many cases, concrete drainage channels force blatant intrusions into the landscape. While providing adequate flood control protection, they also neglect many opportunities for recreational, educational, ecological and aesthetic benefits as well as for social interaction. As the amount of available greenspace decreases, cities are beginning to recognize possibilities for better utilizing drainageways.

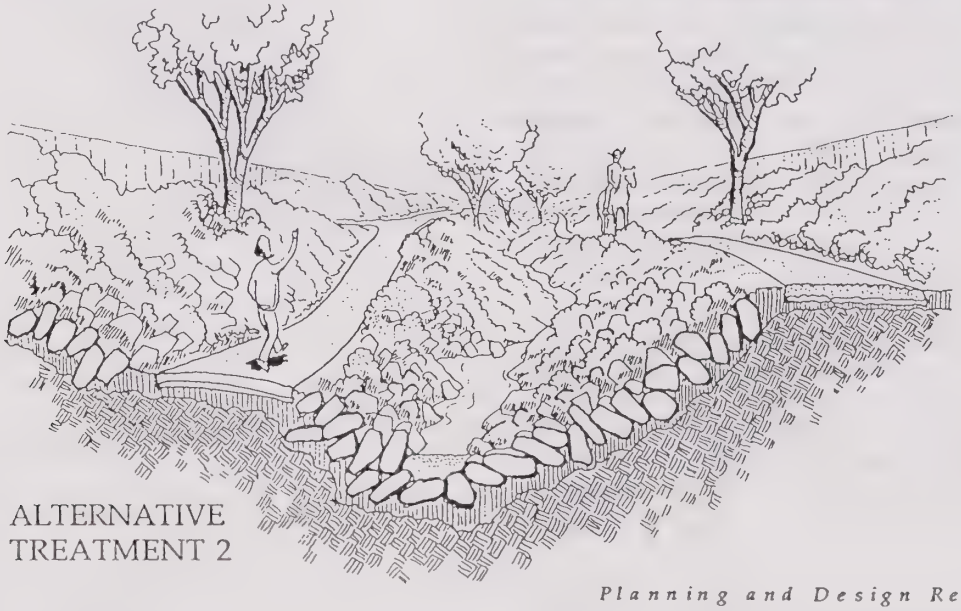
One often thinks of drainage channels as barriers, dividing the city into segments, than as connecting elements linking special features such as parks, schools and commercial areas. Recreational opportunity along the drainageways would incorporate linear parks where wider easements could be obtained. Restoration, utilizing vegetation and riprap (a soft-lined channel concept) would create a more aesthetically and ecologically suitable environment. Restoration techniques, can themselves create wildlife habitat and corridors. Retention ponds would attempt to control non-point source pollution carried in runoff and at the same time help to reduce the volume of runoff.



EXISTING TREATMENT



ALTERNATIVE TREATMENT 1



ALTERNATIVE TREATMENT 2

The planning, design and management of greenspace can do much to strengthen ecological relationships between humans and our environment. It is in these spaces that ecological support processes must actively occur. Working *with* rather than against natural systems will result in economic benefits in addition to intellectual stimulation and emotional satisfaction.

Regional Corridors

Much of Norco's character is drawn from its natural areas. Vitality is breathed into the community by the buzzings and stirrings of the creatures of the land. Indeed, as we humans grow in our understanding of ecological relationships, we begin to realize that our human existence is inextricably intertwined with and dependant upon innumerable other life forms and physical processes. Aside from the fact that we may just enjoy knowing they are present, **our wild neighbors' sustainability means our own.**

Southern California's natural environment has given life to myriad human communities. Meanwhile our development patterns have fragmented communities of plants and animals with grave consequences. Now, as that environment dwindles to the brink of destruction, humans can breath life back into the ailing fragments.

In Norco's immediate region, there exists a golden opportunity to set in place a structure to greatly bolster the viability of existing wildlife habitat islands. The process involves:

- **Conserving habitat islands** that are currently unprotected. This includes Norco's hills, the Pedley Hills, the Jurupa Mountains and whatever may be conserved in the Lake Mathews area. With the exception of a part of the Jurupa Mountains, all of these lands lie within Riverside County.

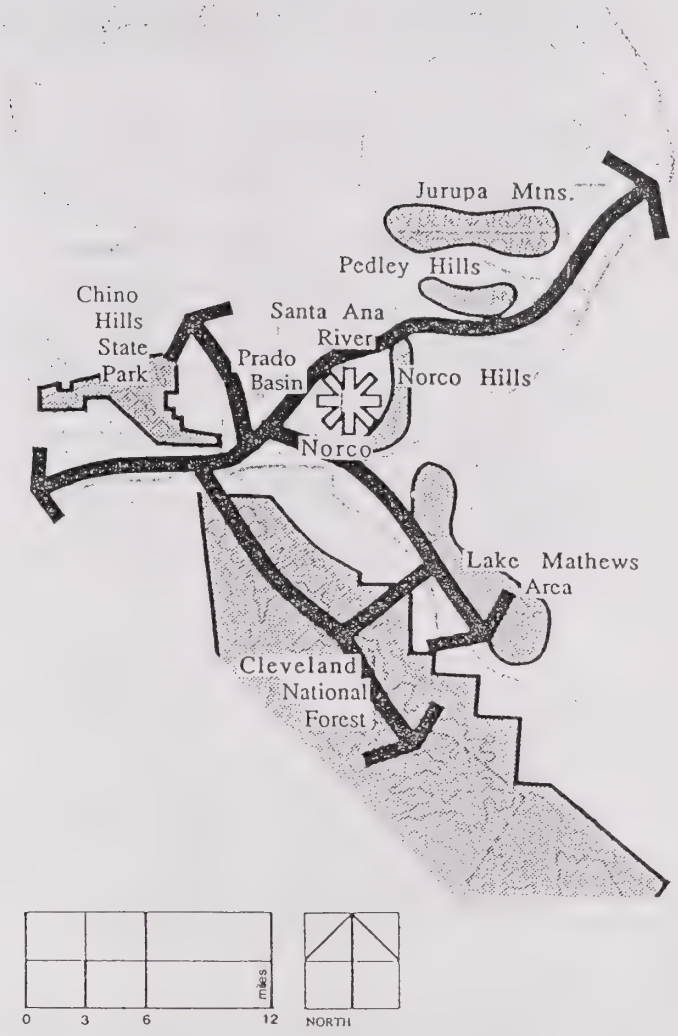
- **Linking habitat islands to one another through corridors.** Ideally these would be wild corridors, wide enough that a mountain lion would not feel threatened passing there. But, given that many human-built obstacles lie in the way of complete connectivity, the implementation of corridors can proceed in a step-wise fashion.

Begin with parking strips, hedgerows and underpasses clothed in the trappings of the native landscape. Linear plantings along drainage channels may be particularly effective. Connect these planted corridors with natural riparian corridors. Over time the corridors can be expanded along with complete restoration of urban drainageways, but planting the seeds for that eventuality must begin now.

- **Inviting the public to share corridors with the wild creatures.** Wildlife corridors can coexist symbiotically with recreational trails. Grant funds may become available to support either or both. Providing humans with exposure to wild landscapes helps to ensure to the persistence of both.

Greenspace as an Ecological Support System

Section XI



REGIONAL CORRIDORS

Close to home, the connection between Norco's hills and the Lake Mathews area may be made via the Buchannon Street (City of Riverside) overpass of the Riverside (91) Freeway. Current traffic volume is not high there and the roadside easements are wide enough for linear shrub plantings and unpaved trails. The overpass would benefit from additional features to prevent horses and wildlife from being alarmed by the freeway traffic below. At some future date the structure might be widened. Or the freeway itself may be restructured to allow a wide passage below it.

An interesting attraction alongside Buchannon where the trail would lead south out of Norco's hills, is the granite bedecked remains of Rocky Hills Hideaway. The former owner (now dead) had intended to open a restaurant there. The site and its eclectic group of stone sculptures and seats, offer great potential as some kind of rest stop along the trail. It might become a trail camp or equestrian bed and breakfast inn.

Completing the connection between the hills and the Santa Ana River may be initiated by installing something as simple as a large diameter culvert beneath Arlington Avenue. Better still might be one large enough to accommodate equestrians and a smaller one just for wildlife. This corridor assemblage can be expanded in time, as well.

While certain pro-active governmental agencies may be doing their best to attend to such details as corridors, their efforts might be strengthened by an outpouring of public encouragement. Trail associations (particularly equestrians) in Riverside County have become a key force in trail and greenspace planning. The vitality of trail users is needed in the planning process. It is recommended that the trail users of Norco become pro-active about making their trail systems as effective as possible.

Animal Waste Options

Norco's animal wastes can benefit greenspace lands. The restorative nature of composted manure applied to the land can regenerate the life of soil, which in turn promotes vegetation and wildlife habitat. Compost and mulch applied to road construction sites reduces erosion and sedimentation and restores the soil structure to reestablish vegetation. Norco's composted animal waste can provide abundant supplies of a soil amendment that is useful and economical for developing and maintaining the greenspace system. This can occur, however, only if the compost materials are properly managed.

Norco is an animal keeping community with the opportunity to develop a model system for animal waste management. Animal wastes are an important resource not currently being taken advantage of. Improperly managed animal waste results in environmental problems such as pollution of runoff and groundwater, flies and other pests, odors and unsightly piles. Sound environmental practices for dealing with animal waste can be implemented by the Parks and Recreation Department (the Parks and Recreation Director manages Animal Control), by citizen groups and by individual efforts through programs and guidelines initiated by city government.

Currently within the City of Norco much of the manure is dumped into the El Sobrante Landfill. Residents pay for bins in which to deposit trash and animal waste. These are provided and picked up by the city waste removal system. Not all residents with animals are willing to pay the high bin fees. Instead, some pay standard trash pick up fees and deposit manure into trash bags even though this is illegal. The municipal code definition of refuse excludes manure, and trash collectors cannot pick it up if they see it mixed in with trash. Some residents also haul manure to the dump themselves or pay an independent company to do so. Many residents utilize manure on their own property, tilling it into gardens as fertilizer or as a device to help break up hard soil. It is occasionally deposited on hot walker rings to be compacted by walking horses or may be stored on the perimeter of the property until it becomes a serious problem necessitating removal. Some residents dump manure illegally – frequently into the Santa Ana River.

The volume of waste and thus the scope of the problem is considerable. The City of Norco Animal Control estimates that there are about 18,000 horses and other livestock such as sheep, goats and chickens within the city limits. This figure is based on the number of households in Norco (7000) and units of animals allowable by law per unit size of property (though not all residents own animals). Norco is unique in that more animals are allowed by law within a given number of square feet here than in most other animal keeping communities. According to Animal Control, one animal is allowed for approximately each 5,000 square feet in the city as contrasted with 6,800 to 8,000 square feet per animal in other cities. Residents are permitted five units of animals per half acre. A horse, cow or pig counts as one unit, a goat or sheep as a half unit. By law, five animal units can include no more than two pigs. Five horses on a half-acre property (each horse producing approximately 36 pounds of manure a day) can be estimated to produce approximately 180 pounds of manure daily. In volume, a single horse produces approximately .07 cubic yards of manure a day, 25.5 cubic yards per year. Four horses produce enough manure to fill a two-cubic-yard bin weekly according to animal owners who participated in community workshops conducted by the 606 Studio. Norco thus generates 459,000 cubic yards of manure a year.

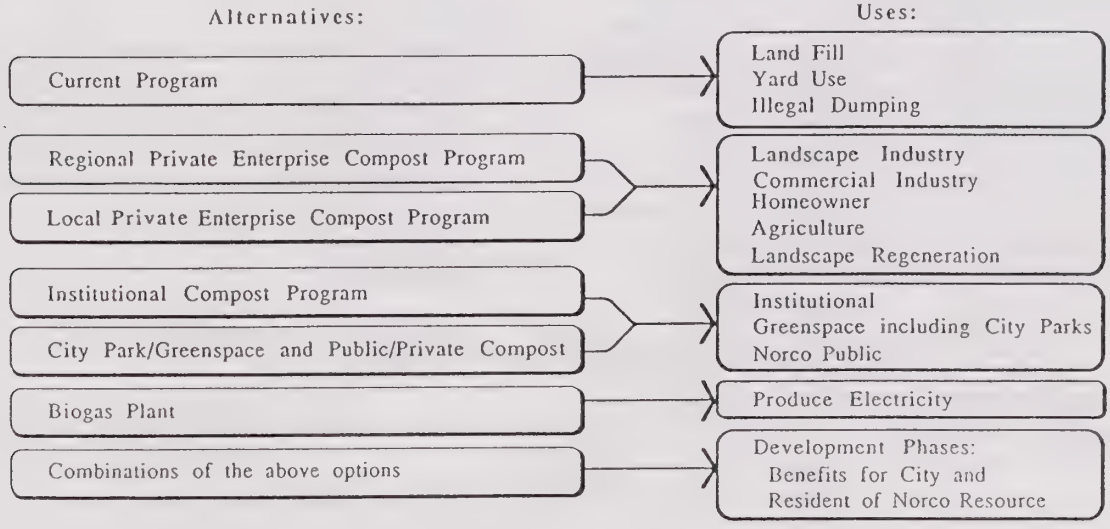
In response to this volume of animal waste and the opportunities to use it as a resource, seven general management options are proposed. To mitigate present problems, a city ordinance requiring manure and yard waste to be separated from trash needs to be enacted as soon as possible. This requirement will facilitate all of the management programs discussed below. Eventually

a program for separating house wastes like plastic, glass and metal would be ideal. Yard waste can be chipped and composted either separately or in combination with manure. It can thus be converted into a useful material supporting the greenspace system.

The project team has identified seven different approaches to resolving Norco's animal manure problem. These are as follows:

1. **Current Waste Removal Program**– Removal to the dump, yard use and illegal dumping.
2. **Regional Private Enterprise Compost Program**– Divert manure from landfill to one of the regional composting companies.
3. **Local Private Enterprise Compost Program**– Divert manure from landfill to a compost company within Norco city limits.
4. **Institutional Compost Program**–California Rehabilitation Center, the future Riverside Community College and the Naval Weapons Station Fleet Analysis develop separate or joint-relationship compost programs.
5. **City Park and Greenspace Compost Program and Public/Private Compost Program**– The resource benefits the city through the use of compost in public greenspace and the yards of Norco residents.
6. **Biogas Plant**–Electricity may be produced through the use of biogas derived from the bio-digestion of compostable materials.
7. **Combinations of the above alternatives**– Phased development of portions or combinations of the above options for the benefit of the entire city.

Option 1 is a continuation of present practices which are undesirable for environmental and esthetic reasons. Options 2 and 3 would produce a large volume of compost most of which would be sold commercially. In options 4 and 5, the compost produced would be used to maintain the viability of Norco's public greenspace areas. Option 6 would produce salable electricity and a nutrient rich residue which could also be applied to the public landscape. Option 7 would produce usable materials for public and private use. The 606 Studio recommends that the City of Norco further study options 4, 5 and 6 to determine their practical and economical advantages and disadvantages and implement the one that proves most feasible.



Norco Animal and Yard Waste Management Alternatives and Uses

Stormwater Treatment and Retention Ponds

Retention ponds hold stormwater long enough to allow for biological purification of runoff contaminated with non-point source pollution. With sensitive design, they can become nodes of wildlife habitat as well as recreational amenities. Due to the biological concentration of pollutants, the use of this type of feature should be restricted to created wetlands. Please refer to Appendix A for further discussion of the effectiveness of such features.

Water and Nutrient Flows

The diagram provides an illustration of some of the changes aggressive greenspace implementation can bring about in the flow of water and nutrients, two major determinants in the functioning of the ecosystem. The City of Norco lies above a portion of its own aquifer, the Chino Basin. Therefore it is in the city's best interests to implement strategies for the improvement of the basin water quality. By doing so, Norco can set an example for its neighbors situated above the aquifer, as well.

Composting of animal wastes can bring about many positive changes wherein potential groundwater contaminants are removed from the soil surface and processed into useable nutrients for the enrichment of the soil and the life it supports. Land and other resources are conserved along with a reduction in wastes transported to landfills outside of town.

The catchment of stormwater runoff and its direction into retention and biological treatment ponds can further reduce the influx of pollutants into local groundwater supplies. Contaminants such as oil, gasoline and other road grime are among the impurities which may be removed in this manner. Significantly cleaner water may then be allowed to replenish the aquifer through infiltration.

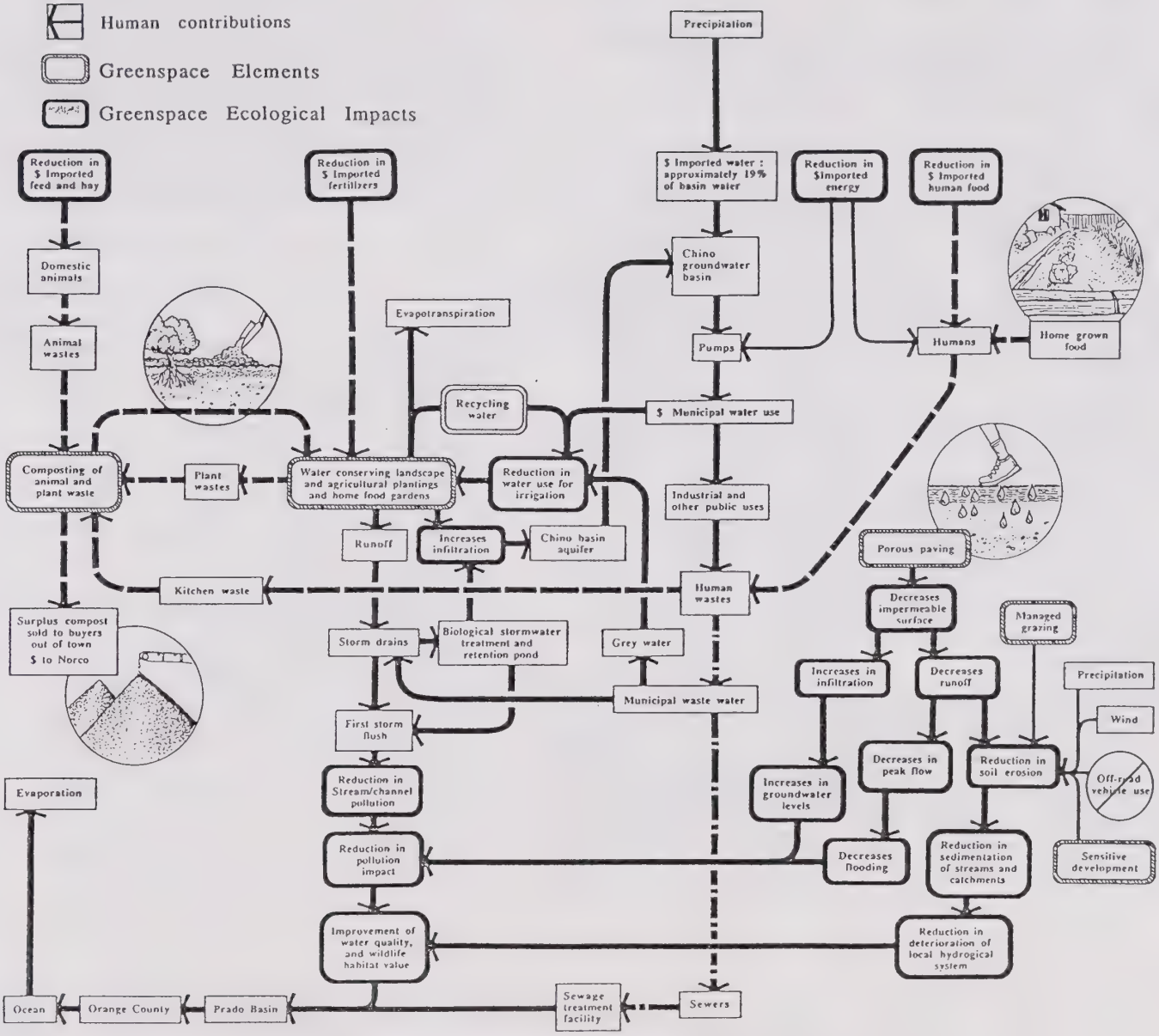
The use of porous materials on large paved surfaces can reduce pollutant-laden runoff while allowing the relatively clean rainwater to percolate into the ground, further replenishing groundwater supplies.

Sedimentation, one of the largest contributors to nonpoint-source pollution can be greatly reduced by lessening the erosion caused by off-road vehicles and standard development practices. Sensitive development in the hills, with the retention, restoration and management of earth-stabilizing native vegetation can protect critical areas of the city's watershed. Grazing can be managed so as to prevent depletion of native vegetation. Properly-timed grazing can actually be an aid in revegetation and fuel-reduction for fire management.

Great savings can be realized in the cost of irrigation water through the use of water-conserving landscape plants. Catchment and recycling of irrigation and grey water can further reduce water consumption. Commercial nursery operators in Orange County have realized savings in fertilizer costs by the recycling of fertilizer-laden irrigation water. With water and nutrient recycling, Norco can reap significant savings, as well.

Consider the greenspace system as a nearly self-sustaining ecosystem, through which wastes are processed and fed back into the system. Consider the improvements in the quality of life with native plant communities in the hills, an abundance of wildlife and clean water in the aquifer. Consider the money saved on imports when water and nutrients are used prudently and recycled.

Greenspace clearly offers models for sustainable living.



WATER AND NUTRIENT FLOWS

Greenspace Standards

Section XII

Each community is unique, based on its geographical, cultural, climatic and socioeconomic conditions. Greenspace standards should reflect this uniqueness.

Greenspace standards herein represent minimum acceptable areas. These standards are based on observation and evaluation of the ability of the city or county to afford and maintain public land. Recommendations refer to published general standards. As general rule, standards "should be of a magnitude to provide sufficient land or recreation space for the full range of activity and facilities needed for the community" (*Recreation, Park and Open Space Standards and Guidelines*, 1983).

The following standards are presented in acres of greenspace, developed as opposed to undeveloped per thousand population and reflecting the quantity of recreation facilities per thousand population. The Greenspace Standards also reflects Norco's projected growth of twenty-eight thousand. Currently the developed greenspace system equals 105.2 acres or 3.7 acres per 1000 pop. Note this figure does not include River Trails Park (277 acres) as part of the developed greenspace system.

The **Stage One-Immediate Decisions** plan recommends that the City consider a Greenspace Standard of **4.3 acres per 1000 pop.** This includes approximately 15.3 acres of additional developed parklands. and also reflects the necessary decisions the city must consider in developing the Ideal Greenspace plan.

The **Stage Four-Ideal Greenspace** plan recommends that the City considers a Greenspace Standard of **8 acres per 1000 pop.** This includes approximately 68 acres of additional developed parklands and includes utilizing the existing drainageways, approximately 51 acres. The combined total of developed greenspace would equals approximately 225 acres or 8 acres per 1000 pop.

Facilty	(N.R.P.A.) Standards	(Norco) Standards	To be added to existing greenspace system
Basketball (Schools not included)	1/3,000	1/5,000	3
Baseball	1/5,000	1/7,000	2
Community Center	1/15,000	1/15,000	1
Equestrian Warm-up Arena	N/A	1/4,000	4
Football/Soccer	1/20,000	1/4,000	2
Racquetball	N/A	1/3,000	5
Rifle Range	N/A	1/50,000	1
Soccer Field	1/10,000	1/4,000	2
Softball Diamond	1/5,000	1/4,000	2
Swimming	1/20,000	1/9,000	1
Tennis	1/2,000	1/2,000	3
Volleyball (Outdoor)	1/5,000	1/5,000	5

606 STUDIO

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

IDEAL GREENSPACE SERVICE AREA

Greenspace for Norco

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

PARKS & RECREATION DEPARTMENT

Bibliography

Adams, Lowell W. and Louise E. Dove, 1989. Wildlife Reserves and Corridors in the Urban Environment. National Institute for Urban Wildlife, Columbia, Maryland.

Adams, Lowell W. and Daniel L. Leedy, Editors, 1986. Integrating Man and Nature in the Metropolitan Environment. National Institute for Urban Wildlife, Columbia, Maryland.

Agonia, Henry, Director, 1987. Public Opinions and Attitudes on Outdoor Recreation in California – 1987. Department of Parks and Recreation; Resources Agency, State of California, Sacramento, California.

Anonymous,undated. Norco Facts. Essay in the files of the Corona Library Heritage Room, Corona California.

Arnold, Robert K., Stephen Levy and Craig Paxton, 1982. Recreation Activity in California 1980 with Projections to 2000. Center for Continuing Study of the California Economy, Palo Alto, California. Prepared for the Planning Division, Department of Parks and Recreation; Resources Agency, State of California, Sacramento, California.

California Department of Fish and Game. Natural Diversity Data Base.

California Department of Fish and Game, Lands and Natural Areas Project. 1988 Annual Summary of Significant Natural Areas of California, Draft.

Carson, Scott E. and Jonathan Matti, 1985. Contour Map Showing Minimum Depth to Groundwater, Upper Santa Ana River Valley, California, 1973 – 1979. "Miscellaneous Field Studies Map". Department of the Interior, U. S. Geological Survey.

Elfers, Karl and Maynard M. Hufschmidt, 1975. Open Space and Urban Water Management. Department of City and Regional Planning, University of North Carolina at Chapel Hill.

Gould, Janet Williams. Corona Source Book – Volume Personal notes in the collection of the Corona Library Heritage Room, Corona California.

Hansen, Nancy Richardson, Hope M. Babcock and Edwin H. Clark II, 1988. Controlling Nonpoint-Source Water Pollution. The Conservation Foundation, Washington D.C in conjunction with National Audubon Society, New York.

Hays, Loren R., November, 1988. Final Report: The Status and Management of the Least Bell's Vireo Within the Prado Basin, California, During 1988. California State University, Long Beach Foundation, Long Beach, California. Prepared for the State of California Department of Transportation, District 8, San Bernardino, California.

Johnston, Bernice Eastman, 1962. California's Gabrielino Indians. Southwest Museum, Los Angeles, California.

Jones, Laurie, Dave Lemieux and Sara Rudman; assisted by Stacy Morris, Suzanne Martineau Palmer and Cheryl Wiegand, 1988. Site Design for Hillside Development. Prepared for the City of Los Angeles by the 606 Studio, Department of Landscape Architecture, California State Polytechnic University, Pomona.

Lancaster, Roger A., Editor, 1983. Recreation, Park and Open Space Standards and Guidelines. National Recreation and Park Association.

Leopold, Luna B., 1974. Water, a Primer. W. H. Freeman and Company, San Francisco.

Lyle, John Tillman, 1985. Design for Human Ecosystems. Van Reinhold Company, New York.

Meiorin, Emy Chan, 1986. Urban Stormwater Treatment at Coyote Hills Marsh: Final Report. Association of Bay Area Governments, Oakland, California.

Midgeley, Jayne, undated. How Norco Was Named and a Thumbnail History of Norco. Essay in the files of the Corona Library Heritage Room, Corona California.

Norco Planning Department, 1982. City of Norco General P

Riverside County Parks Department, November, 1977. Hidden Valley Wildlife Area Management Plan.

San Diego Association of Governments, lead agency, April, 1989. Draft Santa Ana River Habitat Conservation Plan. San Diego, California.

Soil Conservation Service, November, 1971. Soil Survey Western Riverside Area, California. United States Department of the Interior.

Tri-County Conservation League, undated manuscript. The Ecology of the Santa Ana River.

U.S. Geological Survey, 1967 – photorevised 1981. California Quadrangles: Corona North, Corona South, Riverside West and Lake Mathews. United States Department of the Interior.

Personal Contacts

Mark Adelson, Engineering Associate, California Regional Water Quality Control Board, Santa Ana Region, Riverside, California. (Telephone conversation).

Terry Brown, Assistant, California State Department of Water Resources. (Telephone conversation).

Loren Hays, Field Biologist, U.S. Fish and Wildlife Service, Laguna Niguel, California. (Telephone conversation).

Diana Harris, Dean of the Norco campus of Riverside Community College, Riverside, California.

Mark Hoshovsky, Natural Areas Coordinator, Lands and Natural Areas Project, Nongame-Heritage Program, California Department of Fish and Game, Sacramento, California. (Telephone conversation).

Phillip Krause, Park Planner I, County of San Bernardino Environmental Public Works Agency, Regional Parks Department, San Bernardino, California.

Emy Chan Meiorin, Senior Environmental Engineer and Water Quality Program Manager, Association of Bay Area Governments, Oakland, California. (Telephone conversations).

Cathy Nowak, Planner, Environmental and Special Projects Division, Orange County Environmental Management Agency, Santa Ana, California. (Telephone conversations).

Thomas Paulek, Field Biologist, California Department of Fish and Game, Long Beach, California. (Telephone conversation).

John Palmer, Endangered Plant Project, Natural Diverstiy Data Base. (Telephone conversation).

William Pumford, Staff Assistant, U. S. Naval Weapons Fleet Analysis Center, Norco, California.

William H. Roley Jr. Ph.D., Environmental Consultant, Laguna Beach, California.

Paul Romero, Director and Sam Ford, Deputy Director, Riverside County Parks Department, Riverside, California.

Joanne Schneider, Environmental Program Manager, California Regional Water Quality Control Board, Santa Ana Region, Riverside, California.

Gary Stuart, Senior WRC Engineer, California Regional Water Quality Control Board, Santa Ana Region, Riverside, California.

Dr. Robert Tullock, Professor, Department of Soil Science, California State Polytechnic University, Pomona and resident of the City of Norco. (Telephone conversation).

Roger Turner, Environmental Specialist, California Regional Water Quality Control Board, Santa Ana Region, Riverside, California.

Achieving Viable Greenspace for Wildlife and Humans in the Urbanizing Environment by Verna Jigour

The following is an excerpt from a larger paper which is included in a separate appendix volume. The larger work draws together literature on the causes of species extinction with an emphasis on cases particularly applicable to California. The evidence points to the necessity of conserving wildlife habitat long before the point at which species qualify for inclusion on federal and state endangered species lists.

Nodes of habitat richness should be conserved while they still hold their full complement of species. Movement of animals and plants among the nodes is essential to their genetic health. Wildlife habitat corridors can be the circulatory system, providing the body of the ecosystem with its sustenance. Humans are a part of this body and can live in harmony with it. Recommendations are made here for achieving public spaces that will support the long-term persistence of wildlife as well as people and allow for their harmonious interaction.

A General Conservation Program

Objectives for any local conservation program should include the buffering of habitat nodes with compatible land uses, their linkage with one another into a coherent system and the continuing interactive relationship between the network of habitat nodes and the surrounding natural environment. "Existing patterns of high–quality nodes should be examined relative to potential travel corridors and dispersal barriers, and a scheme should be devised to utilize and develop the existing pattern into a landscape conservation scheme" (Adams and Dove, 1989).

For inclusion in the conservation programs of all urban and urbanizing areas, Adams and Dove offer the following recommended components:

- An assessment of the wildlife resources of the area. Also the social value (and potential) of those resources.
- Formulation of policies for wildlife conservation.These should be integrated where appropriate, with other planning objectives.
- Definition of practical requirements for implementing the wildlife strategy, and obtaining the necessary commitments from those who will have to make the resources available.

Specific objectives should include:

- Protection of best sites, e.g. habitats of great value. [The high value "nodes" of Noss and Harris (1986) discussed in the larger paper.]
- Minimization of impact of development of other sites.This might include modifications to designs to reduce impact and/or creation of new habitat.
- Where appropriate, integration of plan with countryside (rural) conservation areas.
- Maximization of wildlife potential of land within local authority ownership or control.
- Provision for public use. Local people should be encouraged to use the habitat network. However, not every site will be capable of sustaining free and regular access. Control should be instituted, where necessary, by site design, location of access points or attractive footpath networks, or by more rigorous methods, if needed.
- Promote wildlife conservation in general. (ibid.)

Appendix A

Some Suggestions for Implementation

Parks

Parks can perform more "life-promoting" functions by being structured as multiple-use modules. Parks could and probably should be associated with nodes of biological diversity as parts of the buffering system. The intensity of recreational use can diminish along a gradient from human use to wildlife use. So too must the degree of human maintenance of the landscape. Local native plants must predominate in the transition zones. The vertical and horizontal structure of the vegetation should blend with the indigenous forms. Generally, there should be decreasing supplemental irrigation along the gradient toward the natural landscape.

Where the natural landscape has been degraded by human activities, restoration is the ideal goal for management. Restoration may involve limiting public access or applying physical restoration techniques such as revegetation, erosion controls and prescribed burning. Ideally, all plants and animals involved in the restoration effort will be derived from sources as close as possible in distance and micro-environment to the treated site. By enhancing the biological viability of the local natural ecosystem, parks can provide richer recreational experiences for their human users.

Where natural or man-made water bodies are a part of the park landscape, areas of the shoreline should be set aside wherein wildlife can have access to the water without intrusion from human activities. The lake with the road or path lining its entire shoreline is less accessible and desirable to many species than one with a more sensitive design. Islands are highly desirable for attracting wildlife and can provide opportunities for non-threatening wildlife observation.

Retention Ponds

Retention ponds can serve as high diversity nodes, as well as focal areas in water quality improvement and their more common role in flood control. They can and have been successfully integrated into parks, as well (Adams, et al, 1986 and Meiorin, 1986).

With respect to water quality improvement, retention basins (as distinguished from the more temporal detention basins) can promote the physical entrapment, including sedimentation, of pollutants. With the proper design, they can also achieve the biological incorporation of pollutants. Retention ponds have demonstrated removals of more than 90% of the suspended particles and lead, 69% of total phosphorus and about 50% of the biochemical oxygen and chemical oxygen demand (BOD and COG), nitrogen, copper and zinc from urban runoff. This results in the improved quality of water entering local aquifers.

The design of retention ponds determines their effectiveness in water quality improvement as well as their potential for wildlife habitat and self-sustainability. Generally, ponds designed with a variety of micro-environmental conditions will function best on all accounts. "The Demonstration Urban Stormwater Treatment (DUST) Marsh at Coyote Hills Regional Park in Fremont (Alameda County), California was designed as a prototype system and research facility to study wetland creation for stormwater treatment in the San Francisco Bay Area" (Meiorin/ABAG, 1986). Three different system designs were constructed. Two years of monitoring showed significant improvements in the quality of urban stormwater, with a follow-up study to be conducted after another two years.

The most successful marsh, both in terms of water quality and wildlife value, incorporated a series of differently structured relationships among the soil, vegetation and

depth of water. An overland flow subsystem proved to attract the greatest diversity of waterbirds to its shallow water and mudflats. "The gently sloping sides of this subsystem provided feeding areas for shorebirds, herons, egrets, coots and dabbling ducks . . . . The dry portions of the overland flow subsystem served as loafing spots for waterfowl, shorebirds, gulls and terns." (Adams et al. 1986). This overland flow feature is apparently responsible for most of the phosphorus uptake as well, in that it allows the greatest amount of exposure of the water to the soil, where phosphorus-utilizing bacteria reside (Emy Chan Meiorin, telephone interview, April, 1989). The deeper open waters of the system attract diving birds, including cormorants and grebes. They also hold a yearly supply of water for mosquitofish (Gambusia affinis), carp and other fish (Adams, et al. 1986).

Among the recommendations made by the ABAG investigators are the following:

> 1. The use of wetlands to treat urban stormwater runoff should be limited to constructed wetlands. Because the degree and significance of bioaccumulations of pollutants in the food chain is as yet unclear, such risks should not be imposed on natural wetlands. These risks are more appropriately taken in artificial wetlands where conditions may be better controlled and periodic maintenance such as dredging or harvesting of vegetation would be acceptable.
> 2. Wetlands established for urban runoff treatment should be sited with due consideration of existing conditions. As evidenced in the DUST marsh, previous land use practices, such as farming, may leave higher than normal concentrations of various 'pollutants' in the soil. When this soil is exposed in a newly constructed wetland, these pollutants may actually be released into the stormwater until the wetland is fully stabilized. Similarly, pockets of brackish groundwater, present in shoreline areas, may actually contribute metals (manganese in the DUST Marsh) and other salts to the relatively fresh stormwater.
>
> (Meiorin/ABAG, 1986).

The recreational value of retention ponds is primarily as an aesthetic backdrop for low-intensity recreation such as picnicking, jogging and strolling. Psychologically, the presence of water in a landscape conveys a perceived cooling. Situated upwind of a recreation area, water can have an actual cooling effect on the ambient air as it is blown across the water body.

Perhaps the greatest detractor to the use of these ponds is the potential weedy appearance of some areas that may be brought on by fluctuating water levels. This is partially a problem of human perception and impatience. Initially, such a constructed pond area will likely be invaded by opportunist species between periods of inundation. But, over time, a succession will begin to develop. This succession can be further tipped by restoration techniques aimed at imitating similar situations observed in nature.

California's vernal pools are known for their colorful bands of wildflowers that move with the rising and ebbing of their rain-filled basins. Numerous examples exist in the central valley of the state, but Riverside County is fortunate to have some relictual vernal pools protected by The Nature Conservancy at its Santa Rosa Plateau Preserve. These can serve as appropriate local model ecosystems whose emulation can be sought. There is evidence to suggest that a vernal pool ecosystem may have once existed around a pond in the Norco hills area which was recently annexed to Corona. The vegetative structure around that pond has been virtually destroyed, apparently through the activities of off-road vehicle users. Any efforts to create such an ecosystem around a stormwater retention pond might only be considered a fitting reparation to the local landscape.

Considerations for Drainageways

Natural streams and drainageways provide a landscape with some of the highest quality corridors. Forman (1983) offered that " The stream corridor should be wide enough to effectively perform its functions both of controlling water and nutrient fluxes from upland to stream, and facilitating the movement of forest interior animals and plants along the stream system." The width of buffer zone necessary to sustain the riparian ecosystem has been much debated, but very little research has been completed on the

subject. Perhaps the ideal buffer zone widths would best be related to stream order.

Stream order is an expression of the increasing concentration of water from the most dispersed or ephemeral drainages to the most consolidated accumulations in the major rivers. "Entire sequences of terrestrial vertebrate species occupy similar functional niches along different-sized streams in accordance with the river continuum concept. For example, a series of carnivorous, amphibious mammals that play similar ecological functions utilize different food particle sizes, different stream orders, and occur at somewhat different elevations along the stream gradient" (Harris, 1984). According to this observation, buffer width would ideally increase with increasing stream order.

Although Harris' statement particularly referred to the wetter climates of the Pacific Northwest, an analogous, perhaps more subtle, relationship exists along the intermittent stream courses, seeps and springs of Southern California. Unfortunately, standard development patterns tend to offer buffer widths inversely proportional to stream order.

Budd and his colleagues found that widths of 30.5 meters, just over 100 feet, were indicated to fulfill the necessary buffering functions for riparian corridors (Budd et al. 1987). In a later study, however, they conceded that political realities preclude "imposing large buffer widths on areas facing development pressures" (Adams and Dove, 1989). They recommended *minimum* buffer widths of 15 meters, or 50 feet, for natural, perennial waterways and 7.6 meters, or 25 feet for "all other waters, perennial or intermittent, including seepage areas, ponds, and sinks" (ibid.).

Urban Creek Restoration

Drainageways are often the only continuous open space left in the urban environment that is uninterrupted by buildings and circulation routes. Unfortunately, they often constitute glaring examples of wasted space. The typical engineered solution to flood control leaves hard-edged, slick-sided channels that are dangerous to animals or humans who might happen to stumble into them. Scraped bare of vegetation, these channels are an eyesore as well as a death-blow to what was usually a most vital wildlife habitat.

Wildlife habitat can be incorporated along restored streams by the selective planting of native trees, shrubs and groundcovers. Non-native plants with particularly high wildlife value may be useful, provided they are not invasive. Waterways have been the mode of travel for many invasive exotic species that take over riparian areas, pushing out the indigenous vegetation which supports the local fauna. The vegetation should be structured so as to allow for all the stratified layers that would be present along a native stream course. Some areas should be left impenetrable by humans. Trails may be meandered around these sections.

Wildlife observation alcoves may be camouflaged in the manner of duck blinds with tree canopies and benches. Along intermittent stream courses, "drip stones" can be an efficient and aesthetically pleasing way to provide water for avian friends. These consist of a drip irrigation emitter threaded through a hole drilled into a rock or stacked rocks. Water is allowed to slowly seep from this emitter and fill up a depression in the rock, ideally dripping over its edge into a lower pool before saturating the ground below, where moisture-needy plants will soak it up. Indigenous-appearing drip stones provide an attractive focal point for observation of small birds and other creatures that frolic in these pools.

Lisa Schicker, Department of Landscape Architecture at North Carolina State University, Raleigh, has provided a wonderful study of relationships between children and wildlife (in Adams and Leedy, eds., 1987). Schicker has been quoted as follows: "If one were forced to choose a single neighborhood open space that best suits wildlife and kids simultaneously, it should be a greenbelt park along a stream corridor with small patches or clumps of vegetation and pathways for bicycle travel. The closer to home, the better" (Adams and Dove, 1989).

Hedgerows and Other Corridors

The discriminate grouping of trees and shrubs can provide effective wildlife corridors for birds and small mammals, while fulfilling various utilitarian and aesthetic functions for people. Many linear landscape treatments already exist in our urban, suburban and rural landscapes. Parkways and hedgerows are common examples. Many of these serve as corridors for various wildlife. But most commonly, habitat has not been considered in their design, and the result is an overabundance of the urban "nuisance" species that may actually ward off the shyer native fauna.

The importance of spatial heterogeneity in properly structured systems cannot be overstated. Complete structural heterogeneity, or the variety provided by the combination of canopy, shrub and groundcover vegetation, may not be necessary for every corridor. Some corridors in Mediterranean-type climates like southern California's may exclude tree canopies from all or a portion of their reaches, in order to continue the matrix of native shrub communities through the human landscape. But heterogeneity must be sought in the network system as a whole and in certain corridors, individually, depending on their geographic locations.

DeGraaf and Chadwick (1984), DeGraaf (1986) (and DeGraff in Adams and Leedy, eds., 1987) have illustrated the significance of vertical and horizontal structural heterogeneity, or layering, to bird species diversity. The 1984 article presented classification schemes that assigned avian species to "guilds" based on their foraging behavior during breeding season. Then, the relationships of both species and guilds were compared with several age classes of 11 different forest types. Features considered in guild assignment were: primary food habit: omnivore, insectivore, molluscovore, vermivore, and carnivore; substrate: ground, bark, canopy, air, stream bank, and flower; and feeding behavior: driller, scaler, gleaner, forager, sallyer, hover-gleaner, prober, and pouncer. The nesting substrate guilds assigned were: ground/herb, shrub/vine/bramble, tree twig, tree branch, tree cavity/crevice, cliff, and nest parasite.

"Results . . . . indicate that foraging quilds are more related to general cover types than are nesting substrate guilds, but bird species (composition) reflect(s) habitat differences to a greater degree than do either guild scheme" (DeGraaf and Chadwick, 1984). These results indicate that foraging and nesting substrate guilds tend to be similar across different forest types, their occurrence more related to structural characteristics such as vertical distribution of foliage, than to the specific tree species or age class. This knowledge suggests design possibilities for corridor landscape structure that might promote integrated pest management. For a given type of insect pest, the appropriate vegetative structure can be created to attract foraging birds who will prey on that pest.

Degraaf (1986 and 1987) provides clear diagrammatic graphics to illustrate the relationships of bird breeding habitat to vertical and horizontal landscape structure. Among his conclusions in that paper are is that "The general effects of urbanization on breeding birds are fairly well known: edge species fare well, and forest species generally decline; overall densities rise as the avifauna is dominated by a relatively few abundant (often exotic) species. Insectivores, cavity- and ground-nesters also decline. These general effects can likely be offset in urban residential and suburban environs if avian habitat needs are considered in landscape design". (DeGraaf, 1986)

"These effects can be mitigated by retention of pre-development landscape features and selection of mater for the planted environment . . . . The prospects for enhancing urban and suburban avifaunas are good. By retaining pre-development fields and woodlots, increasing vegetation volume, especially in spatially concentrated patches, and by the familiar practice of planting species useful to birds, it is almost certain that the number of breeding bird species can be increased" (DeGraff in Adams and Leedy, eds., 1987). It should be noted that in western states, water must be provided for wildlife whose historic access to it has been cut off by human development patterns.

With respect to viable widths for southern California native shrub community corridors, Soulé and colleagues (1988) suggest that hedgerow corridors of the native shrub

species, as little as one meter wide may be enough to permit passage of chaparral-requiring species such as Wren-Tits and Rufous-sided Towhees. California Quail, California Thrashers and Bewick's Wren have been observed in strips less than 10 meters wide. Of course, optimal widths would allow the passage of the largest predators, but where that may be currently difficult to achieve in many locations, narrower widths can still serve an important function.

Wherever wildlife habitat is desired, management practices must not result in an overly "tidy" landscape. In order to achieve a self-sustaining ecosystem, all elements of the system must be there. The goal is to effect nodes at all levels of the biological hierarchy. Wherever possible, dead wood, leaves and other organic debris must be allowed to accumulate on the ground where the decomposers can effect their breakdown. This "humusphere" to borrow William Roley's excellent term, is often forgotten in human-designed landscapes, but is an integral and largely essential component in self-sustaining systems. The living inhabitants of the decaying log must not be forgotten.

References:

Adams, Lowell W. and Louise E. Dove, 1989. Wildlife Reserves and Corridors in the Urban Environment. National Institute for Urban Wildlife, Columbia, Maryland.

Adams, Lowell W. and Daniel L. Leedy, Editors, 1986. Integrating Man and Nature in the Metropolitan Environment. National Institute for Urban Wildlife, Columbia, Maryland.

Adams, Lowell W., Thomas M. Franklin, Louise E. Dove and Joan M. Duffield, 1986. Design Considerations for Wildlife in Urban Stormwater Management. Transactions of the North American Wildlife and Natural Resource Conference Vol. 51 pp. 249–259.

Budd, William W., Paul L. Cohen And Paul R. Saunders, 1987. Stream Corridor Management in the Pacific Northwest: I. Determination of Stream-Corridor Widths. Environmental Management Vol. 11, No. 5, pp. 587–597.

Cohen, Paul L., Paul R. Saunders, William W. Budd and Frederick R. Steiner, 1987. Stream Corridor Management in the Pacific Northwest: II. Management Strategies. Environmental Management Vol. 11, No. 5, pp. 599–605.

De Graaf, Richard M. and Nan L. Chadwick, 1984. Habitat Classification: a Comparison Using Avian Species and Guilds. Environmental Management Vol. 8, No. 6, pp 511–518.

De Graaf, Richard M., 1986. Urban Bird Habitat Relationships: Application to Landscape Design. Transactions of the North American Wildlife and Natural Resource Conference Vol. 51 pp. 232–248.

Forman, Richard T. T., 1983. Corridors in a Landscape: Their Ecological Structure and Function. Ekologia Vol. 2, No. 4, pp. 375–387.

Harris, Larry D., 1984. The Fragmented Forest (Island Biogeographic Theory and the Preservation of Biotic Diversity). The University of Chicago Press, Chicago.

Lyle, John Tillman, 1985. Design for Human Ecosystems. Van Reinhold Company, New York.

Meiorin, Emy Chan, 1986. Urban Stormwater Treatment at Coyote Hills Marsh: Final Report. Association of Bay Area Governments, Oakland, California.

Noss, Reed F. and Larry D, Harris, 1986. Nodes, Netwoks and MUMs: Preserving Diversity at All Scales. Environmental Management Vol. 10, No. 3, pp 299–309.

Soulé, Michael E., Douglas T. Bolger, Allison C. Alberts, John Wright, Marina Sorice and Scott Hill, 1988. Conservation Biology Vol. 2, No. 1, pp 75–92.

Personal Contacts:

Lowell Adams, Vice President for Research, National Institute for Urban Wildlife; Columbia, Maryland. (Telephone conversation).

Eric Jessen, Chief, Program Planning and Acquisition, Orange County Environmental Management Agency, Santa Ana, California. (He may not realize it, but he provided some of the inspiration for this research.)

Mark Hoshovsky, Natural Areas Coordinator, Lands and Natural Areas Project, Nongame-Heritage Program, California Department of Fish and Game, Sacramento, California. (Telephone conversation).

Emy Chan Meiorin, Senior Environmental Engineer and Water Quality Program Manager, Association of Bay Area Governments, Oakland, California. (Telephone conversations).

Cathy Nowak, Planner, Environmental and Special Projects Division, Orange County Environmental Management Agency, Santa Ana, California. (Telephone conversations).

William H. Roley Jr. Ph.D., Environmental Consultant, Laguna Beach, California.

The Society for Ecological Restoration and Management – First Annual Meeting, January, 1989 in Oakland, California – where keynote speaker Chris Maser provided some of the many inspirational observations.

Urban Creeks and Floodway Channels: A Hidden Resource

Considerations for Design and Implementation

Appendix B

By Gary Vasquez

Introduction

Too often our society tries to control nature rather than work in harmony with it. This becomes evident when dealing with the flow of water in, out and through our cities in creeks, streams and floodway channels. Opportunities to incorporate recreational, social, economic and ecological benefits are often overlooked by development. Nationwide, examples abound showing that creek restoration and floodway improvement projects offer recreational, social, economic and aesthetic values.

Creeks are part of our natural history. Their waters carve distinctive signatures upon the landscape, shaping it into patterns that reflect the natural laws governing all physical elements. Creeks are vital natural resources, offering substantial benefit to the communities within their creekshed borders; their landscape is deserving of protection and preservation in much the same way that architectural landmarks are protected and preserved.

As cities grow, the pressure to develop on flood-prone land increases. Acceptance of this development depends mainly on the ability to provide adequate flood protection through engineered solutions. Evidence of these engineered solutions is seen in the straightening and smoothing of water courses. In an effort to promote environmentally sensitive solutions that are generally long-term cost-effective and to provide greater opportunity for community interaction, the following considerations have been asembled. The goals is to initiate community interest in rediscovering hidden natural resources in creeks, streams and floodway channels and to take into account design considerations, implementation strategies and the roles of agencies, departments and policies.

Community involvement is often the primary driving force for initiating creek restoration projects. Local community interest is often essential in obtaining project funding as well as in developing environmental awareness. Local interest groups can play critical roles in restoration, providing commitment and motivation necessary for such projects. Not uncommon by, the people of a community will rally when their city identity is at stake.

As a natural pattern on the land, creeks can provide means of enhancing a community's character and establishing its unique identity. "Man must learn to protect himself and his environment by calling in nature as his working partner. For instance, when safeguarding engineered earthworks, it is more sensible to plant grasses, shrubs, and trees to hold and protect the soil than to use dead materials which are not only less effective but ugly. Man must learn how nature maintains her balance and work with her rather than fight against her." (Schiechtl, 1980)

Concrete Channels: An Artificial Environment

Stream restoration and floodway enhancement projects can be costly to implement due to the amount of labor involved. The perceived function of flood control is to engineer structures that contain peak flow; these include open and closed culverts, bypasses to storm sewer systems and channelization projects. But an artificial environment of this kind destroys a creek's ability to self-regulate and maintain equilibrium through natural processes such as (e.g., the pool and riffle sequence). The loss of aquatic and terrestrial wildlife due to these measures can contribute to excess erosion and siltation. Indeed, the negative impacts generated by channelization extend from the upper reaches of a stream to coastal regions.

Environmentally unstable and visually unfavorable, channelization is also very expensive. Flood control in urbanized areas costs communities millions of dollars each year for constructing concrete channels and culverts and widening, lining and diverting of creeks and streams. High construction costs, negative long-term effects and the public's desire for conservation have all prompted the U.S. Army Corp of Engineers to look into alternative "soft-fix" systems, those that allow natural processes to repair problems. Such approaches use utilizes living plants and inert material. (Lehan, 1985)

Drainageways as Greenspace Corridors

As the demand for greenspace increases, local creeks, streams and floodways will become more important. Utilizing these landscape features reflects a community's need for recreational and educational experiences and a desire to reestablish a connection with nature. Floodway channels and creeks can then become unifying components, rather than barriers dividing cities into segments. Too often, however, buildings and freeways and other urban features define outer and inner city boundaries.

Providing adequate flood-control protection can take place at the same time as enjoying advantages of the natural features of streams. Concepts that addresse streambank stabilization may now fall under classifications of the biotechnical or bioengeering. Only in the late 'seventies and early 'eighties have these concepts emerged as a formal discipline. Their techniques use local plant species and local inert materials for streambank protection; bioengineering techniques can provide adequate flood-control protection and encourage recreational, social and visual opportunities.

A stable stream should maintain equilibrium mechanisms such as low-flow channels, floodplains, meandering channels, pool and riffle sequences and a diverse stream-bank vegetation providing habitat and stream life. An ecosytematic approach to creek restoration or floodway enhancement should include the following:

1. Preservation or restoration of the pre-development stream dynamics by permitting pre-development hydrologic processes to govern project design.
2. Reduction in erosion and consequent reduction of sedimentation and siltation in streams.
3. Restored wildlife habitat.
4. Restored riparian plant communities
5. Improved water quality in stream channels.
6. Runoff capture and local infiltration where feasible
7. Reclaimed use of floodplain and floodway for public education and recreation.
8. Improved visual quality in stream channels.
9. Enhancement of property values.
10. Reduction in cost to taxpayers who subsidize repair of flood-damaged areas

(Kudija, 1988)

Departments, Agencies and Policies

The following summary provides general background to issues regarding policies, agencies and departments. The author is grateful to Bethia Stone, author of *Changing Channels* , who should be recognized for her contributions to understanding the bureaucratic quagmire of regulations and agencies connected with creek and stream restoration.

The Environmental Review

The National Environmental Policy Act (NEPA) of 1969 requires the preparation and review of an environmental impact statement (EIS) on all projects that will have an effect on the environment and that are undertaken with federal financial assistance. The state counterpart to NEPA is the California Environmental Quality Act (CEQA) of 1970. CEQA requires the preparation of environmental impact reports (EIRs) for a wide range of public and private activities. The federal and state acts taken together direct full consideration to environmental impact of a given project's function. They are central to the regulatory process regarding watershed development. But there are no unified codes protecting streams, and development continues to damage creeks and compromise their benefit.

ity and County Levels

Cities and counties are required by the state to adopt general plans. A general plan addresses a various elements, including open space, safety, conservation, circulation, noise and housing. Questions of creeks and streams are usually addressed in connection with open space or land use. All elements and amendments must be adopted by the city council or county board of supervisors. Proposed changes to the general plan require public hearings and review. It is within this political arena that concerns for stream protection may be incorporated into the greenspace system.

Special-issue ordinances and specific plans are may be used to implement a general plan in a designated portion of the city or county. Specific such plans are important because they can be brought to bear areas facing development pressures, such as the fringes of a city. Specific plans must be consistent with the general plan and must include a program of implementation measures. Such measures would normally have the greatest impact at the local level. Specific plans have been considered in several localities for the protection of stream corridors.

Local Flood Control Districts

It is important to note that local planning does not stop at the city or county planning departments. Special-purpose districts, flood control districts, contribute importantly to the decision-making process. Financed through property taxes, these special-purpose districts are mandated by the California Water Code. County supervisors hold the power to create these districts to prevent the obstruction of waterways and to protect the banks of rivers and streams and the surrounding floodplains.

Flood control districts lack regulatory powers comparable to those of local planning agencies, but they have the power to conduct flood hazard studies and to make recommendations to county supervisors on land-use issues and improvement. Flood control districts work with the Army Corps of Engineers and the Department of Agriculture's Soil Conservation Service. Because such arrangements do require involvement at the local planning level, typical approaches to seeking engineering solutions of problems of creeks, streams and floodway systems are reinforced.

State Level

Department of Fish and Game

The Department of Fish and Game (DFG) plays a significant role in the development of state environmental policies. It coordinates with the Corps of Engineers on permit applications. The California Environmental Quality Act (CEQA) review process is often the first contact DFG officials may have with a

proposed project. The DFG review of environmental impact reports can usually determine whether mitigation measures for the proposal are adequate; if not, the DFG may recommend measures.

DFG jurisdiction is provided under the authority of the California Fish and Game Code Sections, 1601 and 1603. Under this code, a Streambed Alteration Agreement is required with the department for any proposal that will alter or modify a streambed, channel or bank. Essentially, the code establishes it is unlawful to divert, obstruct, alter or stop the flow of a stream.

A Memorandum of Understanding (MOU) is required with the party performing channel maintenance. MOUs require that no heavy equipment be used in the streambed, that modification work be done in periods of low flow (July 1 to October 15) and that vegetation removal in stream bottoms be done only with hand tools.

Federal Level

U.S. Army Corps of Engineers

This federal agency has primary regulatory authority over streams. The corps was initially granted responsibility for the improvement of navigation on the nation's rivers. It now conducts floodplain information studies and administers permit programs to regulate the use of navigable waters by private developers and state and local governments.

Flood-control projects and the permit process are important components in stream management and protection. Section 404 of the Federal Water Pollution Control Act Amendments of 1972 gives the Corps responsibility for reviewing applications from those to discharge dredged or fill material into navigable waters. Under the statute, the Corps is authorized to review proposals and issue or deny permits for projects that involve the discharge of dredge or fill material into a waterway. The Corp consults with the U.S. Fish and Wildlife Service (FWS) concerning impacts on wildlife.

The Section 404 regulatory process requires public notice and public hearings. The Corps is under no obligation to follow the advice it receives and can proceed with a project regardless of harm to wildlife. All structural flo control works must meet its design standards and criteria.

Soil Conservation Service

The Soil Conservation Service (SCS) is the second-ranking federal agency with authority in stream-management issues. SCS has the authority to cooperate with state and local agencies in planning and carrying out projects for the improvement of soil conservation and flood-damage protection. Projects include irrigation, drainage, recreation and fish and wildlife enhancement.

Federal Emergency Management Agency

The agency (FEMA) manages the National Flood Insurance Program (NFIP). Only 10 percent of the population (those immediately adjacent to a project) benefit from the construction of a project that an entire taxpaying population pays for. (source). The Army Corps of Engineers and the California Department of Water Resources assists FEMA in determining flood elevations and administering of the program.

Design Considerations

Believing it is possible to restore a creek to its pristine or pre-developed state may be unrealistic, depending on t physical limits and constraints caused by development. But natural stream features can be incorporated to some degree and thus reflect the dynamic and self-healing potential of a water course.

A stream's morphology–its size and form–is dependent on a variety of physical features, including topography, soil composition, vegetation, streambank roughness and magnitude of water flow. Understanding a creek's natural properties can establish ideal goals for urban creek restoration and floodway improvement projects. Maintaining these properties improves a stream's equilibrium at the same time that it increases its stability

and self-regulating potential. This balance, if well maintained, can prevent siltation buildup, improve riparian/wildlife habitat, encourage water infiltration and decrease downstream erosion.

The Pool and Riffle Sequence

The pool and riffle sequence establishes a dynamic equilibrium within a creek or stream, providing visual as well as ecological advantages. Equilibrium becomes disturbed as channelization and increased urban runoff occur. Pools collect sediment during low flows and deposit sediment on the inside of meanders referred to as "point bars.". The riffles collect sediment during high flows and are scoured during low flows. If the pool and riffle sequence is lost, the diversity of water velocities and aquatic habitat is lost. (Jewell, 1981) When restoring creeks or streams and integrating the pool and riffle sequence, one must consider the following criteria:

1. For gravel bed channels with widths less than 80 feet, pools and riffles should be constructed with an average slope not greater than about 0.005%.
2. Channel morphology observes a ratio of average particle size to the average channel slope. Relatively high valves of ratio usually indicates stream with regularly spaced pools; low values indicate unstable conditions without regularly spaced pools. Measurements of this ratio on stable, unaltered natural channels can aid in the design of low-flow channels.
3. Pools should have an asymmetric cross section (steeper side slope on the deep side) and riffles, a symmetrical cross section.
4. Pools should be spaced five to seven channels of width apart (center to center).
5. In straight reaches, the deep side of pools should alternate from bank to bank. In bends, the pools should be located so that the deep side is near the outside of the bend.
6. Rapid drastic changes in land use change should be prevented.

(Kudija, 1988)

Vegetation

The proper use of streambank vegetation can contribute greatly to the success of a restoration project. As a visual effect, plants create linkages, provide visual direction and act as buffers against the elements. Vegetation is also critical to support the local wildlife and enhance its habitat; it may serve to funnel cool summer breezes in specific locations. Greenspaces corridors create microclimates, providing an opportunity for plants to survive where they otherwise might not.

Vegetation along streambanks acts as a binding network of roots that increase the shear strength of the soil. Special consideration should be given protecting of trees along the streambank, for trees have the ability to stabilize a streambank approximately five times the diameter of the tree truck. (Jewell, 1981). Vegetation increases surface roughness, slows the velocity of runoff and acts as a buffer against the effects of transported materials. The selection of plant material is of prime importance; successful restoration projects encourage the use of vegetation that shares identical or similar ecological conditions. The benefits of proper plant selection will become evident over time, whereas structural solutions may deteriorate over time.

Unsuitable plant material has in fact been the major reason for failure of bioengineering methods in the past. Planning bioengineering works should take into account the following: (Schiechtl, 1980)

1. The ecological conditions at the work site.
2. The propagation techniques for each species and the best time for gathering any tree-propagation material.
3. Biotechnical suitability, plant vigor and growth rate.
4. The final goal of the bioengineering works, the practical effects and the desired aesthetic effect.

An example of a technique utilizing vegetation is one known as twilling or wattling. The technique uses live branches bound together and inserted into the streambank, thereby providing bank stability as these cuttings begin to root. Willows have been found to root easily and rapidly.

Bank stabilization can be achieved by using vegetation in combination with riprap, a concrete material broken into workable size. Riprapping used outside a stream bank meander provides protection from scouring. Riprap can also be used for stonewalls or paving surfaces. The size of riprap stone is usually up to two feet in diameter. Smaller stones (6 inches to 12 inches) have been found to be more stable, easier to install and adequate for sufficent vegetative coverage. For cost-saving reasons, restoration projects should take full advantage of available material.

Protecting Creeks and Streams

Creeks and streams are living systems, indicators of water quality. We often neglect the value of the living systems in the urban landscape when we adversely afffect the ability of the stream to maintain an environmental quality acceptable for human as well as wildlife interaction. In no places have these systems been more vulnerable than within cities.

The first flush (approximately one inch) of rainwater carries the highest concentration of contaminants across the landscape into creeks, streams and reservoirs. Any such stream's dynamic system can be significantly affected, for example in increased water temperatures or overall chemical imbalance. Appropriate measures can be taken to maintain the integrity of these systems. A better understanding of the impacts of a creek's watershed will encourage measures to control these non-point source pollutants, for example, urban and agricultural runoff and natural erosion.

Nonpoint-source pollution, because diffuse, is less susceptible to regulation than point source pollution. It is a major concern in attempting to maintain an acceptable water quality. Such pollution is sometimes considered at least as great a threat to water quality as point source pollution and can be contained less expensively (Sawikci & Judd, 1983). In the 1990s the Clean Water Act, administered by the Environmental Protection Agency, will require cities to maintain runoff at a given water-quality level.

The following methods are suggestions for controlling of non-point source pollution at the community level. The general concept is to control urban drainage to allow for collection and treatment of polluted waters from city streets, parking lots and automobile and industrial residues prior to their reaching the sensitive creek system. Creek restoration or floodway improvement projects might consider incorporating a non-point source pollution control-program for the benefit of maintaining a balanced system.

- Infiltration basin: the use of "soft" channeling and retention basins (to store peak runoff) or ponds. Ephemeral runoff can be diverted or detained off channel with dams or gates. Water can be diverted to a temporary holding basin where it seeps into a storage pond or park lake.
- Open Basin–an earth depression with a soil or vegetative cover.
- Rock-filled basin–hides standing water in void spaces.
- Rainwater cisterns
- Check dams–used to stabilize headwaters and to prevent erosion from occurring in upper gullies.
- Porous Pavement–integrated in parking lots, parking aprons and roads with low volume traffic.
- Vegetative linings–offers reduced construction costs and soil erosion; increased groundwater recharge potential; sediment trapped and water quality improved.
- Site planning–buildings clustered to minimize areas of paving and to incorporate runoff collection basin into site surface; opportunity to recycle water for irrigation.
- Hillside maintenance--a healthy vegetation cover on hillsides allowing for greater infiltration. Any drainage swale or ditches should be under 10% in grade.
- Grading–grading a site to allow for gentle slope with greater water contact time and less water runoff; use landform grading employed to divert water from planting areas with low water demand.

Community Involvement: Initiating the Process

Ideas for restoration of creeks or floodway channels are often generated at the community level. Citizens thereby enjoy good opportunity toparticipate in planning, design and implementation phases.

Community involvement serves two purposes: elevating community awareness of recreational, educational and environmental possibilities and assisting with economic feasibility through grant funding. Often these possibilities overlap within the restored system. A community seeking to identify an appropriate site for creek or channel restoration should considered the following questions: Have any problems and their causes existing along the creek or channel, such as increased erosion and sedimentation, been defined? Who is responsible for these problems (private land owners, city, county, state and federal departments or agencies), and what are resultant negative impacts? Local authorities would need to be kept informed.

The implementation of a restoration project depends on approvals of city, county departments and/or state and federal agencies. Maneuvering this bureaucratic web can be frustrating. To streamline this process, proponents must understand who the decision makers are at each level of involvement and become familiar with local ordinances, rules and procedures governing creeks and floodway channels.

Before any restoration, intitial steps in the design process must include surveying documenting the physical and biological features and condition of the creek or floodway channel. Planners also need to note the level of the restoration project and surrounding land uses and to determine in which governmental jurisdiction the project lies. Much of this key information is available through various public agencies.

Citizen management plans and volunteer-based management plans are beginning to have an impact throughout the country. A program in North Carolina established by the State Department of Natural Resources and Community Development conducts a streamwatch program that encourages community members to adopt a stream and inventory its resource and management needs. In California an Urban Creek Council was established by the Department of Water Resources to restore urban creeks and streams.

At the community level, interest groups can generate the necessary people power to make an impact. Sponsorship of the responsible governmental agency or a non-profit organization and arrangements with local colleges or universities (if research is required to assist grant funding) all help bring a project to reality. Restoration attempts should be publicized during the implementation phase to encourage community awareness and a sense of stewardship. Documenting the entire process and making it a part of community history may inspire future efforts.

Potential Funding Sources

The following list of potential funding sources for stream restoration has been compiled by Ann Riley of the Department of Water Resources.

Mr. Clyde Edon
Wildlife Conservation Board
Department of Fish and Game
1516 Ninth Street, Suite 401
Sacramento, CA 95814
(916) 324-7908

Mr. Russel Porter
Park Bond Programs
Office of Grants Administration
P.O. Box 2390
Sacramento, CA 95811

Mr. Kieth Steinheart
Land and Water Conservation Fund
Department of Parks and Recreation
(916) 322-9576

Mr. Jack Hanson
Dingle-Johnson Funds
Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacarment, CA 95814

Mr. Ken Hashagen
Fisheries Restoration Act
Program (SB 400) Room 1237-3
Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814
(916) 323-7323

OR

Mr. Forest Reynolds
Fisheries Restoration Act
Program (SB 400) Room 1251-3
Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814
(916) 323-7323

Ms. Ann Riley
Stream Restoration Program
P.O. Box 388
Sacramento, CA 9582
(916) 323-9544

Urban Open Space Program
(Robert - Z'berg Funds)
Department of Parks and Recreation
(916) 445-4441

Mr. Jim King
Coastal Streams
California State Coastal Conservancy
1330 Broadway, Suite 1100
Oakland, CA 94612
(415) 464-4167

Ms. Dianna Jacobs
State Lands Commission
Land Bank Fund
1807 Thirtieth Street
Sacarmento, CA 95814
(916) 445-5034

Bibilography

Aultfather, Allyson, G., Talma, Kevin T., and Trap, Patricia Murphy, 1988. Master Plan for the Lower Arroyo Seco, for the City of Pasadena. Master Degree Project. California State Polytechnic University, Pomona.

Cummins, Kenneth W., 1974. "Structure and Function of Stream Ecosystems". In BioScience , Vol. 24 No. 11.

Fergunson, Bruce K., 1983. "Infiltration Basins". In Landscape Architecture Magazine, November-December. pp. 89-91. American Society of Landscape Architects, Washigton D.C.

Gunn, Clare A., 1972. Cultural Benefits from Metropolitan River Recreation San Antonio Prototype. College Station. Texas A&M University.

Jewell, Linda., 1981. "Alternative to Channelization". In Landscape Architecture Magazine, July, pp 488-490. American Society of Landscape Architects, Washington D.C.

Henderson, and Sheilds, 1982. Environmental Features for Streambank Protection Projects, Report E-84-1, U.S. Army Corps of Engineers Waterways Experiment Station pubications.

Jigour, Verna, 1988.Urban Stream Restoration Program a Strategy for Implementation. Student Report. California State Polytechnic University, Pomona.

Keller, E.A., 1985. "Channelization: A Search For A Better Way", May. Geology .

Kudija, Chistine M., 1988. Ecosystematic Stormwater and Flood Management Practices of Southern California. Landscape Architecture Master Thesis, California State Polytechnic University, Pomona.

Lehan, Mark., 1985 Natural Techniques reapplied to Urban Rivers, Senior Project. California State Polytechnic University, Pomona.

Leopold, Luna B., 1974. Water a Primer. W.H. Freeman and Company, San Fransico.

McDaniel, Tomas G., 1986.The Santa Ana River: Where it is and where its going. Senior Project. California State Polytechnic University, Pomona.

Nohl, Werner., 1985. "Open Space in Cities: Inventing a New Esthetic". In Landscape Magazine,, pp 35-40. Vol. 28 No. 2.

Nunnally, Nelson R.,1978. "Stream Renovation: An Alternative to Channelization." In Environment Management, pp 403-411. Vol. 2 No.5.

Nunnally, Nelson R., and Shields, F.D., 1985. "Incorporation of Environmental Features in Flood Control Channel Projects", Technical Report E-85-3. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksberg, Mississippi.

Riley, Anne L., 1987. California Department of Water Resources: Urban Stream Restoration Program. 12pp. pamphlet; State of California - The Resouces Agency. Scarmento, California. September.

Schiechtl, Hugo, 1980. Bioengineering For Land Reclamation and Conservation. The University of Alberta Press, Alberta, Canada.

Stone, Bethia G., 1985. Changing Chaannels: Preservation, Protection and Restoration of Urban Creeks, Professional Project, Master of Landscape Architecture in the Graduate Division of the University of California, Berkeley.

Stream Enhancement Guide, 1980. Ministry of Environment, Canada, March.

Stream Obstruction Removal Guidelines, 1983. Prepared by Stream Restoration Guidelines Committe, the Wildlife Society and American Fisheries.

U.S. Army Corps of Engineers, 1985. Environmental Features for Streamside Levee Projects, Waterways Experiment Station, Vicksberg, Mississippi, October. Hynson, et al. Report E-85-7.

Warner, Richard E. and Hendrix, Kathleen M., 1981. California Riparian Systems: Ecology, Conservation, and

Productivive Management. Symposium Proceedings: California Riparian Systems Conference, University of California Davis. September. University of California Press, Berkley, California.

Engineering Considerations in Small Stream Management, 1986. Edited by William L. Jackson. Reprint from Water Resources Bulletin, Available from the American Water Resources Association. Vol. 22 No. 3.

Zeldin, Marvin and W. Carlyle Blakeney, Jr., 1982. "How to Cope with the Corp", Ecopress, Charleston, South Carolina. pg. 7.

Appendix C

Sources of Funding for Parks and Open Space

by Lisa Schenck

The following is a listing of sources for both acquisition and maintenance funding. It is by no means complete, and any parks agency should consider having one person on staff to monitor and seek these sources, or hire a private consultant who pursues funding for a city. Payment usually consists of a percentage of the monies acquired.

GENERAL FUND

This is usually financed by the city's property and sales taxes. It is traditionally a source of funds for park development, maintenance and programming. Based on these monies, a city may or may not have established:

Capital Redevlopment Fund. This is established as a reserve fund to be used for the replacement of park facilities and amenities. It's based on the established life of existing and future parks. Every year an evaluation of the current value of the existing amenities is made, divided by their estimated life.

Maintenance and Progamming. Since most Master Plans acknowledge that the annual costs of maintaining park systems will increase with inflation and the addtion of new programs and facilities, a commensurate increase in this allocation should be reflected.

DEVELOPMENT ASSOCIATED FUNDS

QUIMBY ACT

This is one of the largest potential contributors to the development of park and recreation facilities. It was established in 1965 by the State Legislature in response to the growing pressures of urbanization and the need to preserve open space and park lands.

Under this act, a local city council can establish a Park and Recreation Dedication and Fees Ordinance that is applied to applications for development. In exchange for city approval of the application, the developer must provide a fee, dedication, or combination of them both.

A typical way of determing Quimby fees is the establishment of a base goal ratio of parks and open space acreage to population for the city. The devloper's dedication must then reflect the proportional share their project represents. The city will usually provide an established square footage requirement of dedication according to dwelling type. Fees, in lieu of dedications, can be calculated according to the fair market value of the square footage amount.

AB1600 (GOV'T. CODE 66000)

This bill became effective on January 1, 1989. Its purpose is to balance development interests with local government concerns over the cost of capital facilities necessitated by new development. It allows for the imposition of fees by a city at the time of new project approval when a relationship between the need for a new facility and the project being developed is established.

In order to apply development fees, all cities must meet the following requirements:

1. Identify the purpose and use of the fee
2. Substantiate a "reasonable relationship" or "needs nexus" between the fee and the development on which the fee is imposed
3. Deposit, invest and account for the fees
4. Refund uncommitted funds on a pro-rated basis after five years
5. Establish fees commensurate with the impact. Typical facilities that are funded through AB1600 include streets, sewers, water mains, acquisition and development of park and recreation facilities, bike lanes and trail systems.

CONVEYANCE TAX

This is a proportional tax based on a percentage of real property value that is conveyed of transferred. The tax is

applied to residential and commercial properties.

Examples of the successful use of this type of taxation can be found in the cities of San Jose, California and Nantucket Island off the Massachusetts coast. In San Jose the city has used a percentage of this tax to fund its citywide park system since 1973. On Nantucket Island, a 2% real estate transfer tax was imposed in 1983 as a means of funding open space land acquistions. By 1985 the local Land Bank Commission was able to issue $11.5 million in tax-free bonds, with $4.5 million backed by the community. These funds enabled them to put over 2.5% of the island into a protective status within three years of imposing the tax. (19)

EXCISE TAX
The state has empowered local goverments to impose excise taxes on new construction. Some of the advantages of this tax are that it's not subject to the need to establish a "reasonable relationship" between the fee and the development, and that the monies collected don't have to be earmarked to specific projects. The purpose of the tax is to raise revenues and cannot be used as a means of regulating land or development.

The city of Corona, California currently applies a "Dwelling Development Tax" to all new residential units. The total charge of $960 per unit has $785 available for capital improvements. The Parks and Recreation department is one agency eligible to utilize these funds for park improvement and development funding.

BENEFIT ASSESSMENT DISTRICTS
This is a means of financing public improvements by the imposition of a tax on individual parcels of property that benefit from the improvements. This assessment may be initiated by a petition of the property owners, or by a direct action of City Council, it requires approval by two-thirds vote in the affected properties. The projects are usually financed by the issuance of bonds which are repaid over time by the assessment district.

Critical criteria in establishing a fee assessment are: a clear identification of benefit and a clear identification of the specificity of the benefit. This disallows the use of these monies for general benefits to a community.

MELLO-ROOS ACT OF 1982
Designated districts are established where a levy or tax is applied to new development to fund increased service requirements necessitated by the development. This is typically used where land is undeveloped and the property owners are interested in development.

Typically a flat fee based on land use or square footage is applied to the designated district. Districts can be established by City Council or by a petition signed by a minimum of 10% of the registered voters or land owners in the area. Incurred bonded debt or taxes must be approved by two-thirds of the voters within the district.

The advantages of this act over the establishment of Benefit Assessment Districts are:

1. the ability to acquire financing for general benefits
2. the ability to utilize funds for any capital financing
3. the fact that it can be used for on-going operating costs
4. the fact that the tax is deductible from federal income taxes for the affected property owners.

The disadvantage of this act, like all the others, is the requirement of a two-thirds voter approval.

LANDSCAPE AND LIGHTING ACT OF 1972
This allows for the formation of an assessment district by City Council that can provide funding for park and recreation improvements, maintenance and administration of the district. The assessment is collected with property taxes and must be fairly distributed in proportion to the benefit received. Public hearings are necessay to set the annual levy, but no voter approval is required for its impostion.

This method is currently being used by the cities of San Dimas and Rancho Cucamonga and its use has been upheld in court. It is a popular means of fund acquistion because it's based on the premise that all residents of a community should contribute their "fair share" for parks and recreation benefits.

REDEVELOPMENT TAX INCREMENT
These are Redevelopment Agency tax increment revenues that are sometimes used to finance development of park and recreation facilities.

The revenue is derived form a development related tax increment which can be pledged to bond financing for the acquistion and development of park sites of recreation facilities.

GENERAL OBLIGATION BONDS
These are tax exempt securities secured by a city with two-thirds voter approval. The total amount of bonds cannot exceed a specified percentage of the city domain. These represent a lower cost expense for taxpayers, but are difficult to obtain due to the two-thirds vote requirement.

LEASE-BACK
Non-traditional, long term land uses that can be associated with park development are used to generate revenues that can be used toward debt service incurred by site acquistion expense. Some typical land uses are golf courses, tennis or swimming complexes, or other recreation activities that have revenue potential. Other uses have included residential, highway, restaurant operations, hotels and motels, office or industrial uses.

JOINT DEVELOPMENT
Municipal parks are developed in conjuction with school district capital improvement programs through the shared use of recreation facilities.

REVENUES AVAILABLE FROM OTHER AGENCIES
Many park development projects have been financed by grants from State Park Bond funds. The implementation of the California Wildlife Coastal and Park Conservation Bond Act of 1988 has made funds available in a number of programs.

PER CAPITA GRANT PROGRAM
Funds are available to cities, counties, park and recreation districts, regional park districts, open space districts and other qualifying districts to aquire, develop, rehabilitate or restore park and recreation lands or facilities. The available allocation is based on population.

ROBERTI-Z'BERG-HARRIS URBAN OPEN SPACE GRANT PROGRAM
Funds are available to cities, counties and other qualify districts on a 70% state and 30% local matching basis. Funds are provided for acquistion, development, special maintenance and implementation of innovative programs based on competitive need and block grant allocation.

TRAILS GRANT PROGRAM
This provides funds for competitive grants to be awarded to public agencies and non-profit organizations for the acquistion and development of trails.

HISTORICAL PRESERVATION GRANT PROGRAM
Funds are available for competitive grants to be awarded to public agencies and non-profit organizations for the acquistion, development, restoration or rehabilitation of historical or archaeological resources.

URBAN FORESTRY PROGRAM
Funds are available for competitive grants to be awarded to public agencies and non-profit organizations for urban tree-planting programs.

COMMUNITY DEVELOPMENT BLOCK GRANTS
These are designated for assistance to low and moderate income areas and families. Funds may be earmarked for parks and recreation program and facilities.

BICYCLE AND PEDESTRIAN FACILITIES - SB821
This designates 2% of the Transportation Development Act sales tax funds to be allocated for pedestrian and bicycle facilities. 60% of the annual available funds go to local governments upon application, with the award size based on population. The remaining 40% is awarded on a competitive basis.

Requirements and consideration for the awarding of competitive grants are as follows:

1. The facility must have a regional component.
2. The funds are primarily for Class I and Class II bicycle paths.
3. The use of matching funds is looked upon favorably.

4. There must be a clear demonstration of demand or intended use.
5. There must be a readiness and ability to implement the project within the community.
6. The cost effectiveness of the plan.

These funds are administered by the California State Department of Transportation, application is through the LA County Transportation Commission.

SANTA ANA RIVER PROJECT PROGRAM
A 50% federal matching grant program has been established for improvements connected with the Santa Ana River Project.

ON-GOING REVENUE SOURCES

Despite the effects of Proposition 13 and the Gann initiative on local municipalities, many cities have been able to finance the acquisition and development of park sites from General Fund revenues.

USER FEES
Parks and recreation fees can be used to divert some of the General Fund revenues, that would otherwise be allocated to operations, into the support for capital improvements. This revenue enhancement is possible with a more aggressive fee and concessionaire policy.

ACQUISTION THROUGH DONATION
This has been a significant resource of park and recreation lands for a number of cities in the Los Angeles area. It's particularly attractive when the land in question has severe development constraints.

ADOPT-A-PARK
Service clubs are encouraged to"adopt-a-park", providing the necessary revenues for the parks operation and maintenance, and contributing funds for capital improvements.

CORPORATE DONATIONS
Usually in exchange for the identification of a donors name with a facility, corporations have donated portions of sites for park development, or have financed facilities within parks.

NON-TRADITIONAL REVENUE SOURCES

LAND BANKING
Acquired sites that aren't quite ready for development, can be economically warehoused by allowing interim land uses that will generate revenues. These may be such activities as: park and ride facilities, agriculture and landscape growing areas, and low intensity storage yards.

PUBLIC/PRIVATE CO-OPERATION

CONCESSION REVENUE
Concessions are encouraged that are likely to generate revenue in excess of the operating costs and therefore contribute to a reduction of the debt service. Typical concessions are: baseball and softball diamonds, handball courts, tennis courts, bicycle rentals, batting cages, equestrian facilities, polo grounds, swap meet grounds, and food and beverage concessions.

FACILITIES AND PARK USER FEES
Physical amenities associated with parks can provide locations for non-transitional uses that would be fee generating. Some financially proven uses are: swap meets, special interest group meeting locations, special concession uses such as wedding, concerts, consumer shows, bazaars, auto shows, group picnics, Christmas tree lots and carnivals.

TURNKEY FACILITIES
Facilities are developed by the public sector through their use of tax exempt financing, and then leased to the private sector on a long-term basis. The lease revenues must be high enough to recover development costs. This arrangement eventually provides the public with a fully amoritized recreation facility.

EASEMENTS AND TAX INCENTIVES
The acquisition of open space easements give cities opportunities for the use of quasi-public use of private lands in trail system of bikeways. The use of private can be encouraged through the provision of tax incentives to the land owner or developer. The enabling mechanisms are as follows.

1. OPEN SPACE EASEMENT ACT OF 1974 (GOVT CODE 51071-51097).

This is the principal piece of legislation, in the state of California, available for the protection of open space. Participation is voluntary, and is encouraged through the provision of property tax relief and the probable availability of state and federal income deductions. This act requires the participation of the local government in the granting of easements.

In exchange for the donation of an easement to a local agency or qualified non-profit organization, the landowner receives use-related property tax assessment of his land. This can result in a substantial reduction. The landowner retains title to the land, giving up only certain development rights.

The easement consists of the imposition of certain restrictions on open space lands that will insure their preservation for a length of time as specified by the easement. The mandatory requirement in a easement agreement is that it contain a covenant which applies to the present and all future landowners that ".....the landowner will not construct or permit the construction of any improvements not consistent with the easement....." (20)

A prerequisite to the establishment of an Open Space easement, is the adoption of an Open Space Plan by the city or county. Consistency with the General Plan, especially the Open Space element is also essential. Approval of the grant for easement must be approved by the local governing bodies and based on the consistency with the General Plan as well as the meeting of one of the following requirements. These determine that an easement is in the "best interests" of the city or county:

- The land has scenic value, is a valuable watershed, or is a wildlife preserve
- The retention of open space will "add to the amenities of living in neighboring urbanized areas or will help preserve the rural character of the area in which the land is located" (21), or
- "The public interest will otherwise be served in a manner consistent with the purposes of (the act) and Section 8 of Article XIII" (22) of the California Constitution.

2. CALIFORNIA CONSERVATION EASEMENTS ACT OF 1979 (CIV. CODE 15-816)

This is act was passed to provide conservation organizations with a way to make use of conservation easements without governmental participation. It also assures the legality of these easements and extends their use to any state, city county or other local governmental agency as well as non-profit conservation organizations.

The favorable property tax provisions of the Open Space Easement Act are absent here and it's not yet known how much this will aaffect its use. These easements are intented to be granted in perpetuity.

3. SCENIC EASEMENT DEED ACT OF 1959 (GOV'T. CODE 6950-6954)

This was the first piece of conservation easement legislation enacted. It gave local agencies the power to acquire easements for conservation purposes. It has rarely been used because it doesn't give any direction to local governments in its use and doesn't provide any tax incentivies for land holders. This was replaced by the Open Space Easement Act.

It does allow cities and counties to bypass the procedural requirements of the Open Space Easement Act though, and should be known of for this reason.

The act authorizes any city or county to acquire fee or lesser interests in real property for the purpose of open space conservation. Open space is defined as any space which is characterized by great natural scenic beauty, or whose openness, natural conditions, or present land uses, would enhance the present of potential value of adjacent urban development, or maintain the conservation of the natural or scenic resources.

4. THE WILLIAMSON ACT OF 1965/LAND CONSERVATION ACT (GOV'T. CODE 51200-51295)

This legislation was primarily designed for the preservation of agricultural lands, however, since 1977 it has been amended to provide for the preservation of open spaces as well with the substitution of an open space easement for a Williamson Act contract. This act is highly thought of as the best way, short of full fee purchases, to preserve long-term land preservation.

This act allows landowners whose lands fall within a city or county in an agricultural preserve area to contract with the local governments to restrict the use of their land to agricultural or other open space uses such as: recreation, scenic highway corridors, wildlife habitat, salt ponds, managed wetlands and submeerged areas. In exchange, the landowner receives a use-related property tax assessment. The length of term is defined by the contract with a minimum of ten years.

RELATED LEGISLATION

ARTICLE XII, SECTION 8 OF THE CALIFORNIA CONSTITUTION

This was approved by the electorate as Proposition 3 in 1966. Its intent was to facilitate the preservation of open space and was basically a consolidation of Article XXVIII which provided the groundwork for the property tax relief embodied in the Williamson Act and Open Space Easement Acts.

1970 AMENDMENTS TO THE PLANNING AND ZONING LAW, OPEN SPACE LAND (GOV'T. CODE 65560-65912) AND OPEN SPACE ZONING (GOV'T. CODE 65910-65915)

Additions were made to the state Planning and Zoning laws in responce to the land planning use. These amendments ade the preparation of a local Open Space Plan mandatory for every city, and county in the state. All city and county actions had to be consistent with this plan and all were required to also adopt Open Space Zoning ordinances.

No conservation easement can be accepted or approved by any city of county without prior adoption of this local open space plan.

CALIFORNIA TIMBERLAND PRODUCTIVITY ACT OF 1982 (GOV'T. CODE 51100-51155)

Operation is similar to the Williamson Act, but participation is mandatory here. The purpose is to maintain the state's threatened timberland base and insure long term productivity of forest resources. Timberland is defined as land used for the growing and harvesting of timberland, at set minimum amounts, and for associated uses such as watershed, or wildlife preservation.

The act includes special property tax provisions, and was intended to replace the Williamson Act for the protection of timberlands.

OPEN SPACE SUBVENTIONS OF 1972 (GOV'T. CODE 16140-16154)

This provides for the partial reimbursement, by the state, of revenues that have been forgone by the local governments as a result of their participation in the Williamson Act, or before Jan. 1, 1975, the Scenic Easement Deed Act, or Open Space Easement Act of 1969.

It also provides back-up powers to the state for the enforcement of these restrictions for which subventions were given.

OPEN SPACE AMENDMENTS TO REGIONAL PARK DISTRICTS LAW, 1975 AND 1982 (PUB. RES. CODE 5500-5595); RECREATION AND PARK DISTRICTS (PUB. RES. CODE 5780-5791)

This authorizes the creation of regional park and open space districts by neighboring communities whether they are in the same or differing counties. It also sets forth the powers and procedures of these districts.

They possess the express power to acquire real and personal property and "rights" in these, by any means, including condemnation. The open space lands subject to easements granted in these districts, are qualified for automatic land use evaluation for property tax assessment as provided for in Article XIII, Section 8 of the California Constitution.

Section 5780-5791 also grants these same powers to the local city of county and recreation districts, enabling them to acquire and hold conservation easements under the Conservation Easement Act.

ROBERTI-Z 'BERG URBAN OPEN SPACE AND RECREATION PROGRAM ACT OF 1976
(PUB. RES. CODE 5620-5632)
This establishes a funded state grant program, administered by the State Department of Parks and Recreation. Its purpose is to provide grants to cities, counties, and regional and local park districts, to be used for the acquisition and development of recreation or open space lands and facilities.

OPEN SPACE MAINTENANCE ACT OF 1965
(GOV'T. CODE 50575-50628)
This act provides a means by which local governments may form Open Space Maintenance Districts for the purpose of levying a special annual assessment on real property within the district. The purpose is to provide funds for the cost of maintaining a districts open space.

The act is directly linked to the Scenic Easement Deed Act and was intended to provide a means of maintaining open space acquired under that act.

ABSOLUTE IMMUNITY OF PUBLIC LAND TRUSTS FROM PERSONAL INJURY LIABILITY ON STATE-SANCTIONED PUBLIC ACCESS LANDS;
QUALIFIED IMMUNITY FOR RECREATION ON PRIVATE LANDS
(GOV'T. CODE 831.5 AND CIVIL CODE 846)
This provides absolute immunity to all public entities and their employees from liability to any person for injuries caused by any natural condition existing on unimproved public lands. The purpose is to prevent the threat of tort liability from restricting the number and quality of park, recreation and open space activities on public lands.

This was extended in 1980 to include conservation easements of public Land Trusts that are linked to an access agreement with named state agencies.

Civil Code 846, enacted in 1963, made immunity from liability available to all owners of real property who permit public access onto lands for recreation purposes. This is the most protective when public access for recreation is incidental.

PRESUMPTIONS AFFECTING THE BURDEN OF PROOF IN EMINENT DOMAIN PROCEEDING
(CODE OF CIV. PROC. 1240.670, .680, & .690)
This empowers public entities that have the power of eminent domain, the right to exercise that over lands already appropriated to public use. The requirement for this action is that the public use for which the property is sought, is considered to be "more necessary" than the current public use.

The legislation makes it more difficult to condemn certain open space lands by declaring these uses to already be the "best and most necessary public use." (23) This puts the burden of proof onto the condemning agency.

KEENE-NEJEDLY CALIFORNIA WETLANDS PRESERVATION ACT OF 1976
(PUB. RES. CODE 5810-5818)
This act charges the state Fish and Game department and the Parks and Recreation department to work together toward a program that will preserve and enhance wetland areas. It empowers either department to acquire real property interests less than the fee, including development rights.

This act also allows for the local management of wetland areas under certain circumstances.

Bibliography

Adams, Lowell W. and Dove, Louise E., 1989. Wildlife Reserves and Corridors in the Urban Environment. National Institute for Urban Wildlife; Columbia, Maryland .

Allen, Margit Galas et al, June, 1987. Crafton Community Planning Study. Department of Landscape Architecture. California State Polytechnic University, Pomona, California.

Barrett, Thomas and Livermore, Putnam, 1983. The Conservation Easement in California. Island Press. Covelo, California.

POD, Inc., August, 1988. City of Corona Department of Parks and Recreation Masterplan.

POD, Inc., April, 1989. City of Signal Hill Department of Parks, Recreation and Open Space Master Plan.

Appendix D

Questionnaire Tallies

NORCO PARKS AND RECREATION DEPARTMENT

Dear Citizens of Norco:

A Master Plan of Parks, Recreation and Open Space is being prepared for the city by the 606 Studio, a team of faculty and graduate students from the Deptartment of Landscape Architecture at Cal Poly, Pomona. Your responses to this questionnaire will help us establish priorities for programs and facilities. Please take a few minutes to complete the survey and return it no later than March 20, 1989. Include any additional comments on a separate sheet. All responses will be kept confidential.

Thank You,

Ray Odell
Director of Parks and Recreation

The first five questions are for coding purposes so that we can best match needs to people.

1 How long have you been a resident of the City of Norco?

Less than one year (47) 1 to 2 (74) 3 to 5 (110) 6 to 10 (87) Over ten years (309)

2 Please indicate the total number of people living in your household.
1-(30), 2-(149), 3-(134), 4-(168), 5-(78), 6-(21), 7-(1), 8-(1), 9-(2)
Please indicate the number of people in each age category.
Children under 5 (205) 20 to 29 (218) 40 to 49 (352) 65 and over (75)
5 to 9 (83) 30 to 39 (413) 50 to 64 (223)
10 to 19 (430)

3 Which of the following terms best describes your ethnic heritage?

African-american (4) Asian/Pacific Islander (10) Hispanic (28)
American Indian (14) Caucasian (568) Other: _____

4 Which of the following categories describes your total household income?

Under $10,000 (16) 20,000 to 29,999 (59) 40,000 to 49,999 (110) 75,000 (98)
10,000 to 19,999 (29) 30,000 to 39,999 (77) 50,000 to 74,999 (185) and up

5 Are you: Female (426) Male (179)

6 How often do you (and/or your household) use Norco parks and recreation facilities or programs?

Several times a week (77) Several times a year (222)
Weekly (87) Once a year (53)
Monthly (78) Never (85)

7 Which park(s) do you use most frequently? Ingalls Park (247), Community Center (123), River Trails Park (33), Wayne Makin Park (54), Snipes Park (43), Parmenter (34), Kips Korner Park (20), Clarks Field (8) and Ted Brooks Park (13).

8 For each activity listed below, REGARDLESS OF LOCATION, indicate how often you participated in the past year.

	Daily	Weekly	Monthly	Couple times a year	Never	Outside Norco
Picnic or Barbecue	(1)	(41)	(74)	(233)	(92)	(89)
Baseball	(8)	(50)	(12)	(48)	(241)	(12)
Football	(7)	(12)	(5)	(35)	(265)	(10)
Soccer	(7)	(21)	(8)	(22)	(256)	(17)
Tennis	(4)	(20)	(16)	(60)	(226)	(14)
Volleyball	(3)	(11)	(5)	(59)	(241)	(20)
Basketball	(22)	(43)	(27)	(56)	(209)	(18)
Swimming	(37)	(47)	(27)	(103)	(147)	(16)
Specialized Classes	(3)	(22)	(8)	(36)	(146)	(11)
Youth	(8)	(44)	(8)	(35)	(185)	(6)
Adult	(3)	(21)	(16)	(46)	(168)	(18)
Animal Husbandry	(48)	(27)	(26)	(55)	(192)	(16)
Jogging/Hiking	(48)	(59)	(26)	(53)	(162)	(29)
Crafts	(25)	(29)	(22)	(37)	(195)	(28)
Fitness	(36)	(52)	(20)	(24)	(159)	(18)
Other:	(7)	(14)				

9 Do you feel the fees being charged in Norco are?

	High	Reasonable	Low	Not aware of fees
Adult Recreation	(30)	(280)	(1)	(210)
Youth Recreation	(41)	(280)	(1)	(193)
Facility Rentals	(32)	(153)	(0)	(275)
Equestrian Center	(45)	(186)	(0)	(280)

10 If you use parks and recreation facilities OUTSIDE of Norco, or if you DO NOT USE any recreation facilities, please indicate the reason below.

(38) Norco facilities are not conveniently located
(130) Programs/facilities I want are not available in Norco
(66) Norco facilities are inadequately maintained
(115) There are not enough facilities in Norco
(77) Programs/facilities not available at convenient times
(17) Prefer to use facilities near work
(77) Prefer to do recreation with/near friends/relatives
(77) Other: _____

11 Do you feel that the parks and recreation facilities in the City of Norco are adequately maintained?

Yes (315) No (97) Do not know (146)

12 Are the Equestrian Centers adequately maintained?

Yes (264) No (76) Do not know (239)

13 Would you like to live in close proximity to:

	Yes	No	Neutral
a Active Recreation Area(s)	(233)	(114)	(147)
b Natural Landscape	(441)	(10)	(66)
c Riding Trail	(355)	(39)	(109)
d Bicycle Trail	(274)	(93)	(128)
e Hiking/Jogging Trail	(293)	(71)	(146)

14 Please evaluate the need in Norco for each of the following facilities/programs:

INDOOR RECREATION	Need More	Adequate Number	Need Fewer
Aerobics Classes	(100)	(204)	(19)
Arts/Crafts	(140)	(190)	(11)
Auditorium	(93)	(187)	(7)
Basketball	(77)	(211)	(9)
Dance Classes	(90)	(205)	(10)
Meeting Rooms	(77)	(198)	(9)
Racquetball	(136)	(139)	(8)
Recreation Rooms	(92)	(167)	(10)
Weight Training Classes	(101)	(170)	(11)
Volleyball	(78)	(189)	(6)
Other:_____	(32)	(47)	(1)

OUTDOOR RECREATION	Need More	Adequate Number	Need Fewer
Amphitheater	(171)	(103)	(20)
Archery	(86)	(151)	(18)
Badminton	(48)	(165)	(18)
Baseball	(61)	(186)	(12)
Basketball	(66)	(169)	(14)
Croquet	(33)	(155)	(26)
Equestrian Facilities	(205)	(139)	(12)
Football	(40)	(176)	(11)
Handicap	(121)	(121)	(6)
Natural Areas (undeveloped)	(324)	(63)	(5)
Neighborhood Natural Areas	(304)	(55)	(7)
Picnic/Barbecue/Family	(262)	(91)	(5)
Picnic/Barbecue/Group	(206)	(104)	(11)
Racquetball	(111)	(121)	(28)
Rifle	(113)	(96)	(67)
Shuffleboard	(50)	(143)	(31)
Skateboard	(109)	(114)	(40)
Soccer	(62)	(151)	(15)
Softball-Adult	(59)	(182)	(10)
Softball-Youth	(55)	(179)	(8)
Swim-Competition	(70)	(176)	(9)
Swim-Recreation	(116)	(155)	(8)
Tennis	(91)	(158)	(8)
Trails:			
Bicycling	(266)	(83)	(11)
Equestrian	(246)	(112)	(17)
Handicap Accessible	(162)	(94)	(8)
Jogging	(180)	(100)	(13)
Off-Road Vehicle	(75)	(78)	(118)
Walking/Hiking	(246)	(80)	(10)
Volleyball	(77)	(143)	(9)
Warm up Arena	(135)	(99)	(12)
Other:_____	(21)	(8)	(3)

15 Please evaluate the need in Norco for each of the following programs:

PROGRAMS/ACTIVITIES	Need More	Adequate Number	Need Fewer
City Parades	(93)	(310)	(17)
City Street Fairs	(213)	(200)	(14)
Dances - Adult	(137)	(240)	(15)
Dances - Teen	(200)	(161)	(9)
Equestrian	(232)	(161)	(19)
Handicapped	(152)	(140)	(9)
Natural History	(199)	(127)	(7)
Rec Cente. Drop In	(145)	(156)	(5)
Senior Activities	(125)	(183)	(7)
Teen Programs	(245)	(116)	(7)
Youth Programs	(217)	(115)	(9)
Other:_____	(13)	(13)	(6)

16 Which of the following times of the week would you be likely to use recreation facilities and/or programs of the City of Norco if they were open and available to you (check all that apply).

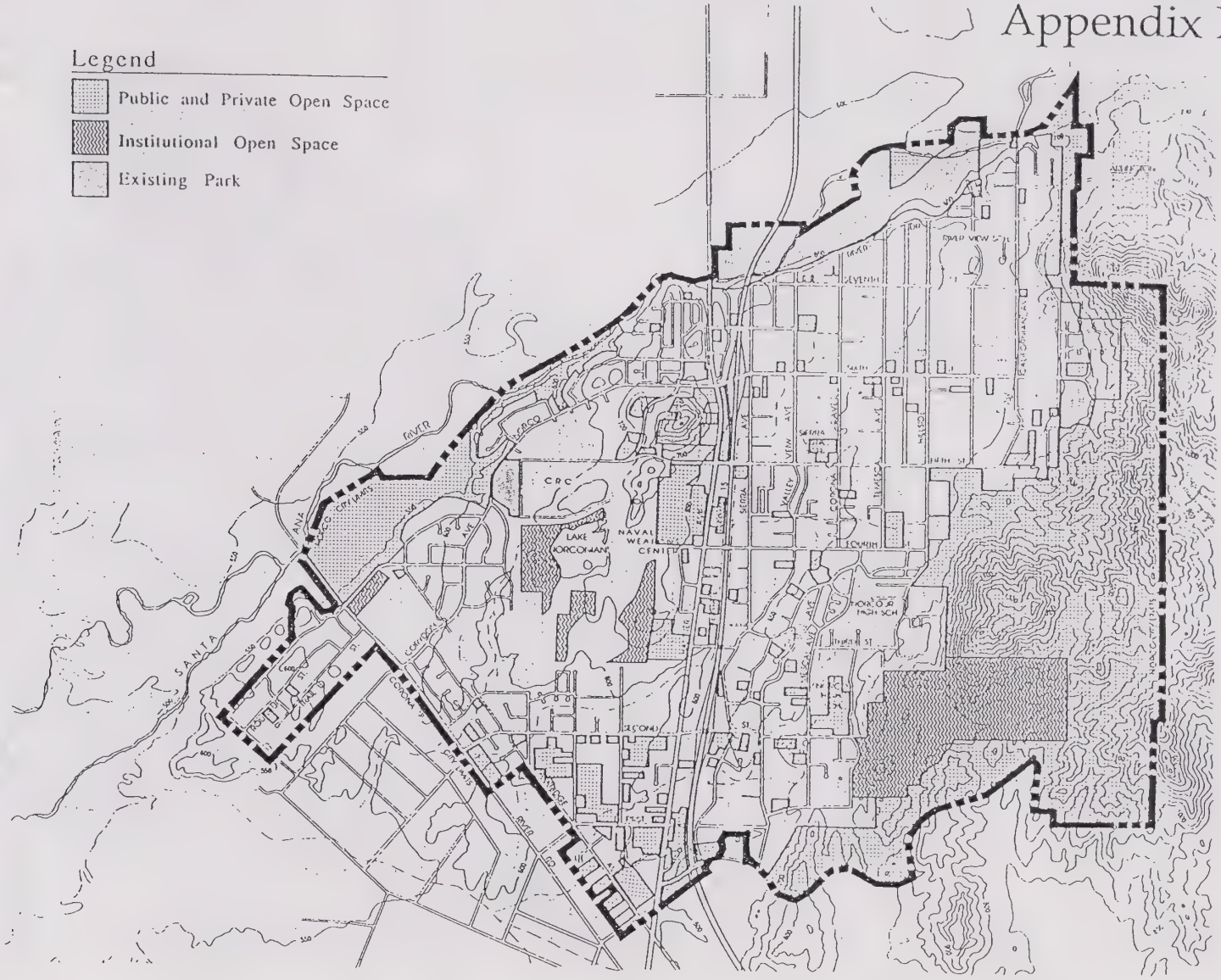
Earlier than 9:00am	(139)	(81)	4:00pm to 6.00pm	(140)	(156)
9.00am to Noon	(261)	(124)	6:00pm to 9:00pm	(149)	(275)
Noon to 2.00pm	(242)	(83)	9:00pm or later	(81)	(77)
2.00pm to 4:00pm	(221)	(101)	Never	(15)	(11)

17 Please describe the ONE facility and/or program you would most like to have added to the Norco Parks and Recreation Department.

General community responces are as follows:

- Keep dirt bikes out of the entire area–they are a menace to horses.
- Indoor or outdoor pistal range.
- Handicapped swimming, supervised senior calistenics and physical fitness.
- More childrens sports programs–Riverside Prrks and recreation have a much more organized program for young children just starting out in sports.
- Activities for single adults, disscussion groups (a non-religous all welcome thing), more art classes, city sponsered tree planting that all Norco residents participate in, maybe coverthe hills facing Norco with pines and create a wilderness and preserve the rural country atmosphere and protect the ozone/environment.
- Norco Needs to be cleaned and streets in better shape and some street light. Norco was clean years past, but in poor condition now. Clean Norco!!! Resident over 40 years.
- Youth bicycle trails and rifle range.
- Groups bike rides and nature walks.
- Would like to see volleyball for women between 50 to 60 years old.
- Better youth summer/vacation camps and day care programs. Swimming facilities and lake (Norconian) recreation.
- Bicycle trails.
- Would like an aerobics class for those of us who work swing shift.
- Senior league baseball field.
- Equine center at River Trails Park.
- Adult social dancing of old-timer dancing.
- Another gym for volleyball, basketball and weights.
- Racquetball. Also think of using small parcels for neighborhood open land (i.e. odd size lots caused by freeway, east of freeway between 1st and 3rd Street. No bathroom necessary, just lawn, trees benches, maybe swings or horse hitching post. give-up open land where smaller kids can play hop-scotch, roller skate.
- Wilderness camping or overnight riding/camping areas.
- Well, I feel that the skaters, as you say should have a special place because they are a big enough organization and know what they are doing. It would be good business too.
- A place for teens to go when the can't go home or want to stay away for awhile.
- More things for teenagers. Going to the movies is getting OLD!!!
- Norco Beach: club, another gym, teen activities, teen dances teen group trips and a big park with a lake.
- A recreation center where kids could go and play pool, ping-pong, etc...
- Teen dance club.
- Longer basketball season.
- Earthquake preparedness.
- Victory gardens.
- Community clean-up programs.
- A "drop-in" teen center.
- Horse auction and sale.
- Walking trails.
- Swim classes for the youth.
- More fitness gyms (weight-training and gymnastics).
- Adult soccer.
- Auditorium

Thank you very much! We welcome your additional comments. Please return completed questionnaire in the attached postage paid envelope.



606 STUDIO

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GREENSPACE INVENTORY

Greenspace for Norco

PARKS & RECREATION DEPARTMENT

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE


Legend
Light Commercial
Heavy Commercial
Manufacturing
Institutional
Residential
Agriculture-Residential
Open Space
Parks
LAKE NORCONIAN
SANTA ANA
606 STUDIO
LAND USE
Greenspace for Norco
CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA
GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE
PARKS & RECREATION DEPARTMENT

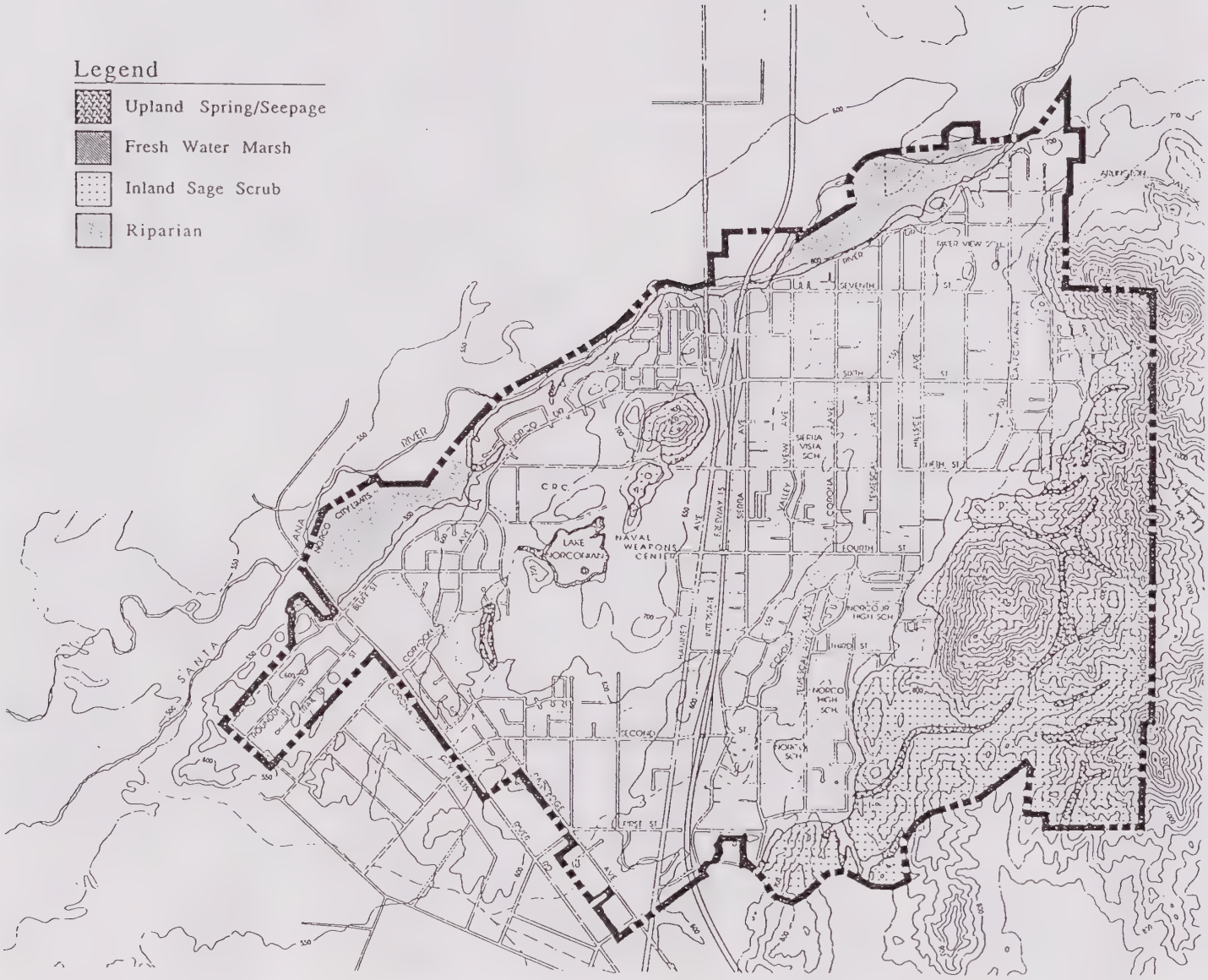
606 STUDIO

SLOPE

Greenspace for Norco

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE



606 STUDIO

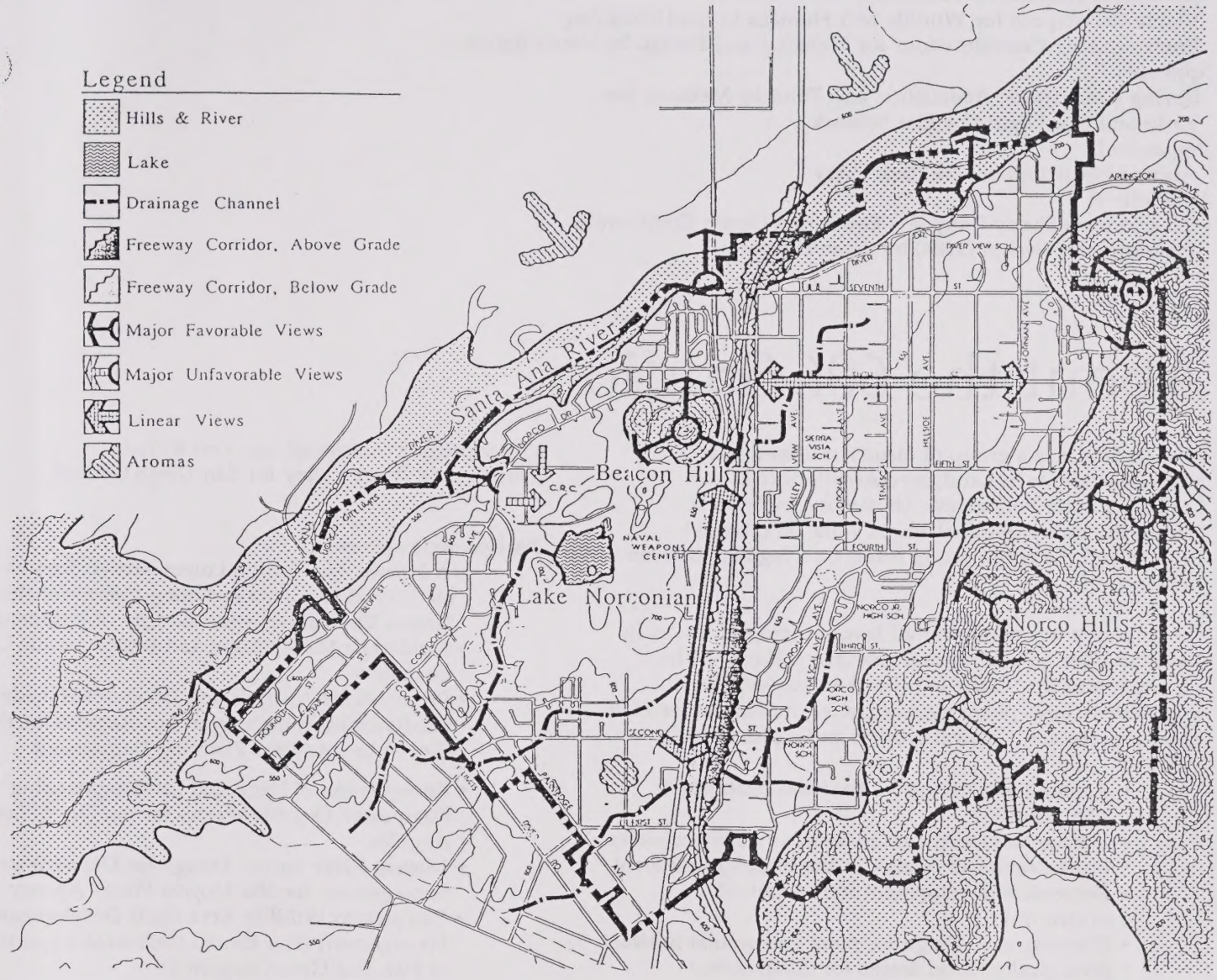
VEGETATIVE ASSOCIATIONS

Greenspace for Norco

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

PARKS & RECREATION DEPARTMENT



606 STUDIO

SITE ANALYSIS

Greenspace for Norco

PARKS & RECREATION DEPARTMENT

CALIFORNIA STATE POLYTECHNIC UNIVERSITY POMONA

GRADUATE STUDIES IN LANDSCAPE ARCHITECTURE

0 1000' 2000' 4000' 6000'

NORTH

Greenspace Appendices is a separate volume which includes the following:

Appendix A (Expanded Version)
Viable Greenspace for Wildlife and Humans in the Urbanizing Environment: Considerations for Planning and Design by Verna Jigour
Appendix F
Saving Greenspace: Acquisition and Funding Methods for Parks and Open Space by Lisa Schenck
Appendix G
Animal Waste Options by Faith Perry
Appendix H
Excerpt from Shady Canyon – Equestrian Center Community: Planning and Design (1984) by Anne Holman

About the 606 Studio

The 606 Studio is a group of faculty and third-year Master's students in Landscape Architecture at the California State Polytechnic University in Pomona. Within the group, student teams work on different projects and the entire group meets on a regular basis for reviews.

Projects vary in nature, but all involve complex issues in landscape design and natural resource planning. The orientation of the Studio is toward an ecosystematic approach to land planning, integrating human needs with natural processes. Typical projects and topics include:

- Planning and design for new and established communities
- Management and conservation of water resources
- Conservation of energy in the built environment
- Recreation development in the natural environment
- Planning and design for plant and animal habitats
- Ecologically-based design for urban areas, hillsides, and agricultural areas

The academic studio environment offers the freedom for students and faculty to explore issues and possibilities without the economic constraints of professional practice. Even so, the real nature of the projects and the clients' needs demand that projects have a strong practical base, as well as display technical and professional expertise.

Other projects developed this year include:
The Tijuana River Valley for San Diego County.

Past projects include:

- A Master Plan for the Lower Arroyo Seco within the City of Pasadena including Design for the Stream Environment for the City of Pasadena
- Landscape Management and Design for the City o Coachella
- Processes for Analysis and Design of Hillside Subdivisions in the City of Los Angeles for the City of Los Angeles Planning Department
- Revegetation of Degraded Landscapes using Composted Organic Wastes for the City of Los Angeles
- Mojave River Basin: Design for Desert Water Management for the Mojave Water Agency
- San Jacinto Wildlife Area Draft Development anc Management Plan for the California Department of Fish and Game, Region 5
- Design for the Etiwanda/Day Canyon Area for the University of California Natural Reserve System and a Consortium of Landowners
- Landscape Management Plan for Endangered Species at San Clemente Island for the Natural Resources Office, U. S. Navy, North Island.

U.C. BERKELEY LIBRARIES
C124910160